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Paper TRADE JOURNAL

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VOLUME 124, No. 20 MAY 15, 1947

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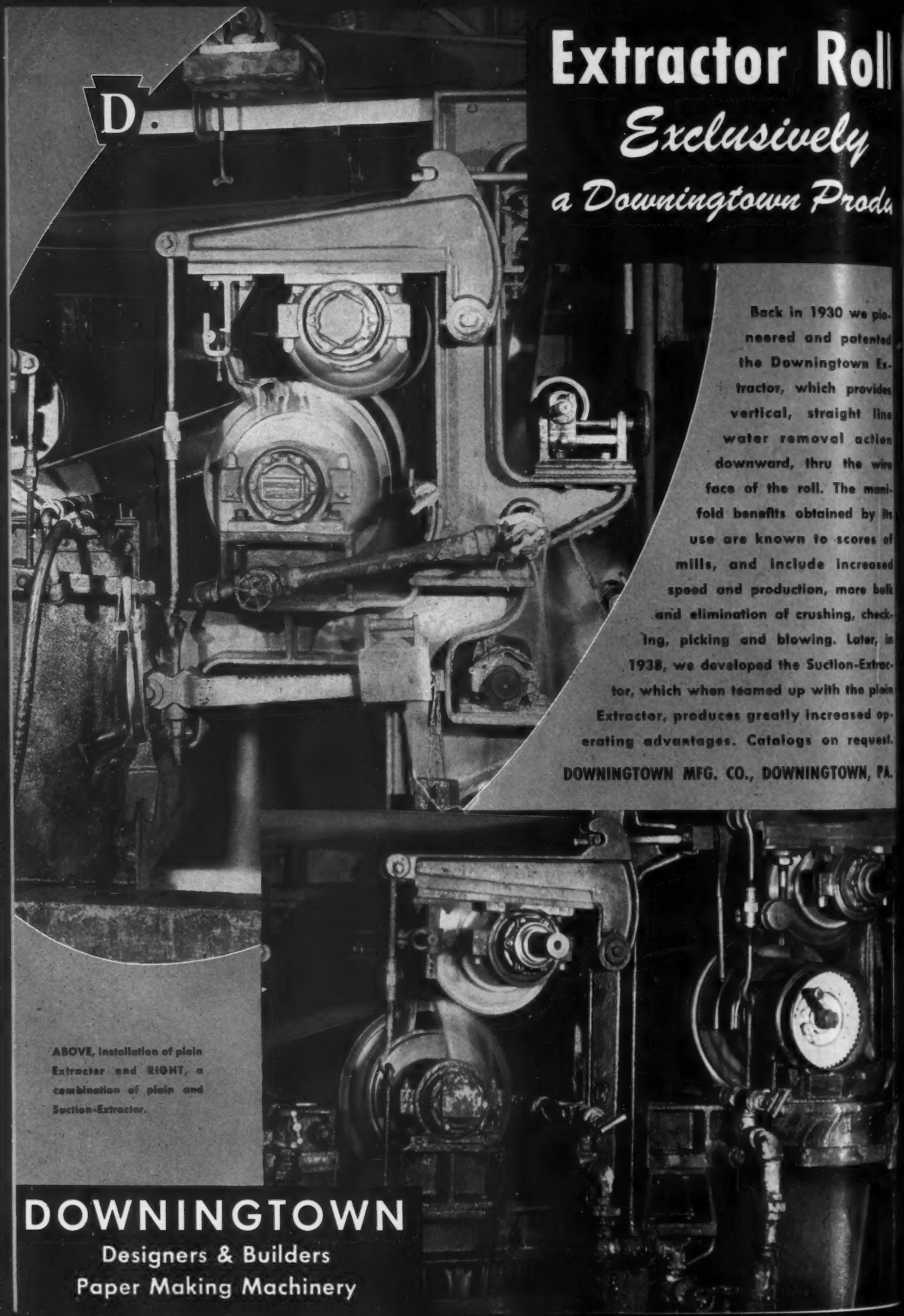

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ABOVE, installation of plain Extractor and RIGHT, a combination of plain and Suction-Extractor.

DOWNINGTOWN

Designers & Builders

Paper Making Machinery

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CALENDAR OF COMING EVENTS

May 18-21, 1947—National Paper Box Association, Annual Convention, Hotel Traymore, Atlantic City, N. J.

May 22-24, 1947—American Pulp and Paper Mill Superintendents Association, Annual Convention, Edgewater Beach Hotel, Chicago.

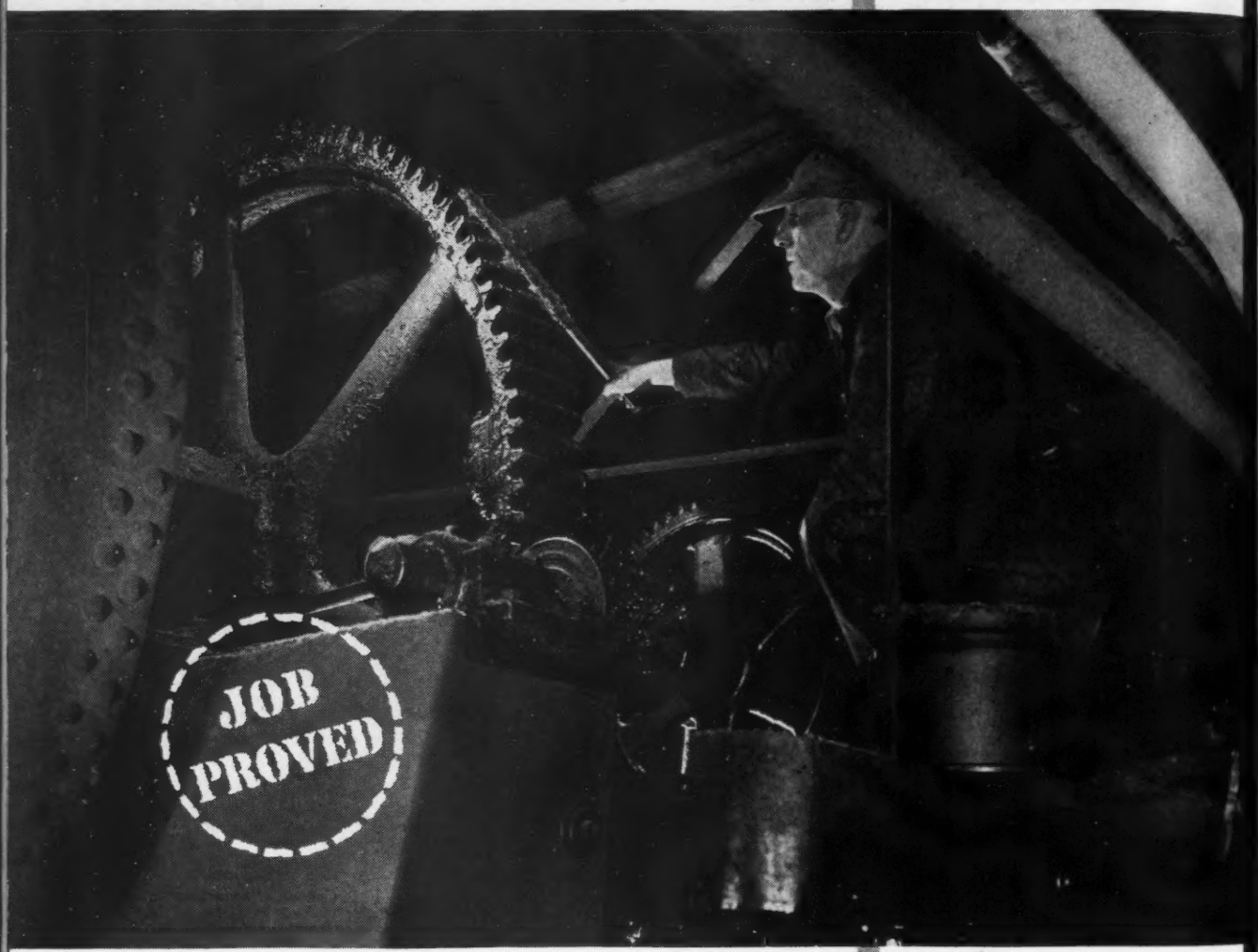
June 11-13, 1947—Canadian Pulp and Paper Association, Technical Section, Summmer Meeting. Hotel Algonquin. St. Andrews-by-the-Sea, N. B.

June 16-17, 1947—American Society for Testing Materials, Annual Meeting, Chalfonte-Haddon Hotel, Atlantic City, N. J.

June 20-21, 1947—Paper and Twine Association, Annual Meeting, French Lick Springs Hotel, French Lick Springs, Ind.

October 27-29, 1947—The National Paper Trade Association of the U. S., Inc., Semi-annual Convention, Hotel Sherman, Chicago.

Sinks Its Teeth Into a 50% Saving



SUN PAPER MILL LUBRICANT...

Clings to Digester Gear Teeth in Sulphite Mill, Lasts Longer, Helps to Cut Lubrication Costs

A New England mill, which manufactures absorbent towels and sulphite pulp, had a problem in the lubrication of the big gears on a rotary digester.

Messy black gear compounds of a well-known brand were being used, but they were hard to apply and didn't stay on. To correct this situation, a Sun Engineer was called. After checking all the factors involved, he recommended an extra heavy Sun grease with special adhesive properties.

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INDUSTRIAL PRODUCTS

Paper TRADE JOURNAL
REG. U. S. PAT. OFF.
VOL. 124, NO. 20 MAY 15, 1947

Chicago Paper Strong Waste Now Firm

CHICAGO—Despite record paper and paperboard production for the first quarter of 1947, estimated at over five million tons, the Chicago paper trade market continues to expect real tightness because accepted orders and production are still being maintained at about the same rate. Backlog of orders has been continuously high since the beginning of the war and stocks on hand remain at the lowest level in many years. There is some talk of a relaxation in demand but it continues to be just "talk" as far as the trade here is concerned. Mill representatives report no signs of it at the mill level although jobbers have reported that some converted paper products are being delivered more freely than in the past. Steps to reduce inventories in isolated instances where they are high are said to be partially responsible for this spotty condition.

In the waste paper trade, movements remained strong after the changes of two weeks ago. Prices were steady on No. 1 mixed at $18 a ton and on No. 1 corrugated at $30, delivered to mills. It was reported that arrivals of news were especially heavy and the market was indicated as "uncertain" although the mill price remained at $20 according to local quotes.

Deerfield Glassine Raises Pay Scale, Shares Profits

MONROE BRIDGE, MASS.—Reports of wage increase for employes of the Deerfield Glassine Company have been confirmed by President Paul E. Hodgdon. Hodgdon said the increases had been in effect since April 1 and were in line with the concern's two-fold policy to pay competitive wages equal to those elsewhere in the industry, and to provide a profit-sharing plan for company employes.

As of April 1 hourly base rates were advanced five cents, bringing them up to a competitive point. In addition, Hodgdon said employes are receiving seven cents per hour in a profit-sharing plan, an increase of two cents over the amount previously paid.

All hourly workers were included in the five-cent base rate increase. Office workers, as well as other employes, benefit by the profit-sharing plan.

The concern employs about 200 at its local plant.

Record Pulpwood Cut Postpones Pinch in Paper Production

Georgia Questions Rates On Pulpwood Shipments

ATLANTA—The Georgia Public Service Commission last week ordered rail carriers to show cause why long-haul rates on pulpwood should not be reduced to conform with newly authorized short-haul tariffs. A hearing was set for 10 a.m. June 4.

According to Commissioner Chairman Walter McDonald, the rate structure became completely unbalanced when the Interstate Commerce Commission authorized a 20 percent rate hike recently. Rail carriers tacked this onto the existing long-haul rates, making them higher than intrastate rates in other Southern states—higher, even, than interstate hauls.

Chairman McDonald said the rails would be asked to show cause why the short-haul rates now applicable to distances of 250 miles should not be extended to cover distances up to 460 miles.

MELVIN J. KILLIAN

who has been appointed technical director of the Kalamazoo, Mich., paper mill of the St. Regis Paper Company. Mr. Killian formerly was control supervisor and pulp mill superintendent for the Combined Locks Paper Company with which he was associated for ten years. He was graduated from the University of Wisconsin in 1933.

TORONTO — Newsprint production at the current 101 percent rate for the balance of the year would use up most, if not all, of the nine million cords of pulpwood produced during the last cutting season, according to production authorities. Any pinch in supplies will not be felt, however, until near the end of the production year for the newsprint mills. At the moment production managers are not making any guesses as to how they will come out on the year's operations.

Pulpwood cutting will continue well towards the end of May and by that time it is expected that there will be ready for the drives the biggest pulpwood cut on record for Canada. The pulpwood cut is estimated at nine million cords, against 8.3 millions for the 1945-46 season.

The spring drives will get under way before the end of May in some sections of Ontario, but not more than 75 percent of the pulpwood cut moves to the mills by water. The balance has to be hauled by railroad or truck, and the haul is getting longer all the time. Pulp and paper men point out that the percentage of pulpwood requirements which can be moved by water has declined steadily in recent years. This was emphasized during the past winter, when the severe weather conditions combined with a boxcar shortage to cut back deliveries to the mills to a considerable extent.

Any estimate concerning the ability of the pulpwood cut last winter to meet the ever increasing demand for newsprint would have to take into consideration such points as inventories on hand and the possibility of a fluctuating demand. Last year Canadian newsprint companies produced 4,135,978 tons and even greater production has been predicted for this year.

Sensenbrenner Honored By Catholic War Veterans

NEENAH, Wis.—F. J. Sensenbrenner, retired chairman of the board of Kimberly-Clark Corporation, was one of six Wisconsin men to receive awards for outstanding Catholic action from the Catholic War Veterans during its recent convention at LaCrosse, Wis.

James Coy Retires Flambeau Office Closed

CHICAGO — Perhaps the most unpleasant news in the Chicago territory this week is the story of the retirement from active duty of James "Jim" Coy with the Flambeau Paper Company. Mr. Coy, who was vice-president in charge of sales of the Park Falls concern, served the paper industry faithfully and well during a lifetime of successful sales work. Known and beloved by thousands of paper men, king pin of the jovial entertainment at SAPEYE social functions, adviser to scores of paper men and keenly cognizant of progressing paper conditions, Jim is now going to "take it easy." He was given at least a preliminary farewell at the April 28 meeting of the SAPEYES and was presented with a luminous dial alarm clock by George Gibson of Mosinee "to remind him to be at the office at 9 a.m. after May 1."

Mr. Coy's retirement from active business circles also heralds the close of the Chicago offices, at least temporarily, of the Flambeau Paper Company. Forrest Patterson now becomes vice-president in charge of sales but will headquarter at Park Falls, visiting in Chicago frequently. The Chicago business contacts of the company, to be used as Chicago headquarters by Patterson, will be out of the offices of the Kansas City Star at 202 S. State Street, Chicago. Folks dropping into the old Conway Building address of Flambeau will do well to remember that and to bear in mind that "Franklin 5692" is not the number to call. Phone connections with Flambeau headquarters can be made through Wabash 1067, the Star offices on State Street.

Lucius Foster Quits CPA To Reenter Trade Assn. Work

WASHINGTON — Lucius F. Foster, prominently identified with the paper industry in pre-war years, is returning to trade association work at Boston, Mass., after May 15, upon the effective date of his resignation as administrative officer of the war-time Civilian Production Administration's tinplate branch, it was learned this week. Prior to the war, Mr. Foster was for many years respectively with the Paper Bag Manufacturers' Institute, and the Union Bag and Paper Corporation. His new connection will be with Guild Associates, Boston, a trade association managerial organization.

United Paperboard Elects Loddengard

NEW YORK—P. M. Loddengard was elected vice-president of the United Paperboard Company this week at a meeting of directors. Dividends were declared at the same meeting of $6 per share on preferred and $1 per share on common stock. Both are payable May 28 to stockholders of record May 23.

ROBERT J. KURTZ

For services rendered the British Army during the Battle of the Bulge, the British Empire Medal was presented to Robert J. Kurtz, member of the sales staff of Union Bag & Paper Corporation, New York, at a ceremony in Washington, May 9, by Lord Inverchapel, British Ambassador to the United States.

For more than three weeks during the Bulge battle, Technical Sergeant Kurtz was attached to the British 30th Tank Corps as it moved down from Holland to attack along the north salient of the Bulge. Because Kurtz knew every feature of the terrain, his maps, prepared under air bombing and artillery fire as the British tanks advanced, were invaluable "beyond the line of duty."

Scott's Claire Lyon Named To Foreman's Club Council

PHILADELPHIA — Claire Lyon, plant personnel manager of the Scott Paper Company and a member of Delaware County Industrial Club, has been named to the executive board of the National Council of Foremen's Clubs.

F. Leland Whiting, secretary-treasurer of the local club, announced Mr. Lyon's appointment on Wednesday last. The selection was made at the annual meeting of the council recently held at Hotel Adelphia.

The Scott Paper executive will be one of the three sales representatives from Pennsylvania.

Nine members of the local club attended the Philadelphia meeting, including Lyon and Whiting. More than 250 delegates, representing 57 of the 84 clubs represented on the council, attended the sessions in the Quaker City.

Safety Men Hear Schloemer On Use of Fire Records

MENASHA, Wis. — Lawrence B. Schloemer, chief of plant protection of Marathon Corporation here, was a speaker at the 24th annual Midwest Safety Conference sponsored by the Greater Chicago Safety Council on May 5 to 8, at the Sherman hotel in Chicago. He addressed the fire prevention session on "The Importance and Use of Fire Records."

Union Bag Counts Its Old Timers

NEW YORK — Starting with a membership of 141 employees with 25 years or more of service, the Quarter Century Club of Union Bag & Paper Corporation was formed recently at banquets held in New York City and Glens Falls, N. Y., at which each member was presented with an engraved gold watch.

Twenty-three veterans of the New York headquarters, including President Alexander Calder himself, who joined the company as a salesman in 1913, were honored at the Waldorf-Astoria, May 1. Oldest New York employee in point of service is Crawford Palmer, consultant to sales manufacturing control, who joined Union Bag 48 years ago in the Hudson Falls, N. Y., plant as a clerk.

Other New York City veterans include Louis H. Flachsenhaar, costs and order supervisor and specialty paper packaging expert, 41 years; H. S. Daniels, executive vice-president, 27 years; Leonard J. Doyle, vice-president in charge of sales, 34 years; and A. J. Manning, manager of the purchasing department, 31 years.

One hundred and eighteen veterans of the Hudson Falls specialty bag plant were presented with engraved watches at a dinner at the Queensbury Hotel, Glens Falls, May 3. Oldest Hudson Falls employee is Paul Brunette, Sr., with a record of 54 years with the company. Other veterans include Harry Cornell, 49 years; Henry Gaulin, 48 years; Leon Murray, 46 years; Henry LaPoint, 46 years; William Gaulin and Charles Doyle, 45 years; and Vice-president True M. Avery, 39 years. Oldest service record among women employes is held by Effie DeGarmo, with 44 years.

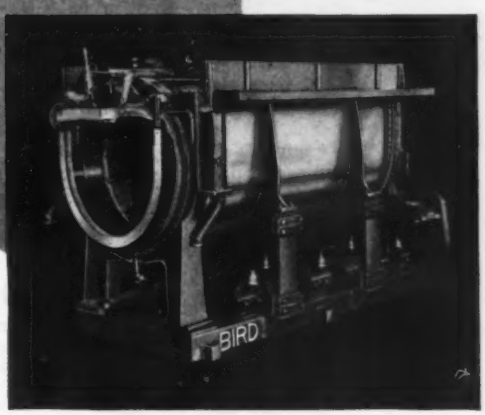
Twenty-three Hudson Falls veterans have served 40 or more years with Union Bag, while the 118 with 25 years or more of service represent nearly ten percent of the total employment of 1,200 at the plant.

Murray Makes Progress At Henrotin Hospital

CHICAGO—Edward G. Murray, vice-president of the St. Regis Paper Company, is reported as making satisfactory progress at Henrotin Hospital after being seriously burned May 7th in a fire in his hotel suite in the Ambassador West hotel. Fire department officials said that Mr. Murray apparently fell asleep while smoking.

Mr. Murray, who is also executive vice-president of the St. Regis Sales Corporation in charge of the sale of printing, publication and converting papers, has been associated with the company for 15 years. Well known in the paper industry, he was president of the Groundwood Paper Manufacturers Association in the years from 1940 to 1943.

85% of all the paper made on this Continent passes through BIRD SCREENS because Bird Screens help to make better paper and more of it per day at lowest screening cost per ton



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Dexter Improvements Making Good Headway

WATERTOWN, N. Y. — The Dexter Sulphite Pulp & Paper Company expects to have its newly expanded and rejuvenated plant in operation early next year. The new turbo-generator high-pressure steam plant, which is to deliver 3,500 kilowatts of power for mill operation, will be completed by the end of this year.

Already the Bagley & Sewall Company has delivered the 38 driers for the new Bagley & Sewall Fourdrinier machine with the 130-inch width wire which is to be set up in a new machine room early next year. This machine will make glassine and a variety of special papers at a 24-hour production of 16 to 40 tons of paper depending upon the particular grade being produced.

An important feature of the expansion program will be two new digester units with a 24-hour production of 25 tons of sulphite pulp. They will be additional to the eight digester units now in operation at a production of 80 tons of high grade sulphite per 24 hours and will thereby bring the total sulphite production to 105 tons each complete day.

The new turbo-generator high-pressure steam plant will make the Dexter mills independent of hydro-electric generation either by the company itself or by an outside company.

In the rehabilitation and expansion of the Dexter Sulphite Pulp & Paper Company mill a new chip bin has already been finished and carrier and piling facilities are being provided for 25,000 cords of pulpwood. Eventually the company hopes to bring its wood in by water shipment direct to Dexter or to Sackets Harbor. At the present time wood is being trucked in.

When steam freighters can land at Cape Vincent wood is brought to that port, trans-shipped by rail over the Cape Vincent branch of the St. Lawrence division and then over the company's Dexter & Northern line to Dexter.

The old Warren Parchment Company mill, more recently operated by Robert E. Reade, Inc., has been divested of its machinery and will soon be razed.

The Dexter Sulphite Pulp & Paper Company has turned over its water power to the Frontenac Power Company which will handle hydro-electric generation electric current in the future.

Endicott Johnson Starts Work On Bigger Carton Factory

ENDICOTT, N. Y.—Endicott Johnson will erect a five-story addition to the Pioneer Annex factory in Johnson City to boost its carton producing capacity to 200,000 cartons a day.

A start on the project was made possible by Civilian Production Administration approval of a $100,000 construction project. The ultimate cost is expected to exceed this figure.

The new structure will be of concrete, steel and brick. Its architecture will harmonize with that of the Pioneer Annex, which is of white concrete with red brick facings on the exterior. The building will be 61 feet long and 60 feet wide. The production capacity of the carton department is now 170,000 daily.

Gottesman Takes Agency For Mexican Sulphate Pulp

NEW YORK — Gottesman and Company, Inc., has just been appointed exclusive selling agents in the United States for the Compania Industrial de Atenquique S.A., manufacturer of kraft sulphate woodpulp. The Compania Industrial de Atenquique recently completed at Atenquique in the state of Jalisco, Mexico, a new and modern pulp mill, having super-strong, earthquake-proof buildings, which is claimed to be one of the most up to date pulp mills. It has a capacity of about 120 tons a day of high grade kraft sulphate pulp.

In addition to the manufacturing facilities, a modern town of some 250 cement, brick and tile dwellings, hotel, markets, school, complete water and sanitary facilities have been constructed to provide for the workers in the mills. Two railroad bridges have been built in order to connect with the lines of the Mexican National Railway permitting all rail shipments to all points in the United States as well as to the local Mexican and export markets.

Because of adequate timber facilities for future expansion, the mill is completely designed for the installation of additional equipment.

Mead Reelects Slate At Annual Meeting

DAYTON, Ohio—At the annual meeting of the Mead Corporation, April 29, the following officers were re-elected: George H. Mead, chairman of the board; Sydney Ferguson, president; C. R. VandeCarr, Jr., executive vice president; J. O. Mason, Alan G. Goldsmith, Speed Warren, T. W. Fernald, H. E. Whitaker, and R. H. Savage, vice presidents; Murray Smith, secretary, and Al H. Mahrt, treasurer.

Re-elected as directors were Charles S. Cheston, Charles W. Deed, Sydney Ferguson, Clarence Francis, E. T. Gardner, Alfred W. Jones, C. F. Kettering, George H. Mead, H. T. Mead, Matt N. Smith, Murray Smith, H. E. Talbott, N. S. Talbott, C. R. VandeCarr, Jr., and R. I. Worrell.

San-Nap-Pak Earned $876,580

HOLYOKE, Mass. — San-Nap-Pak Manufacturing Company, which bought the Mt. Tom Sulphite Pulp Mill recently, earned $876,580 last year or $3.45 a share, it was reported here.

Berkeley Mills Provide Kimberly-Clark Gauze

NEENAH, Wis.—More than a million yards of gauze weekly will be provided by Berkeley Mills, Balfour, N. C., for Kotex production, according to *Co-operation*, Kimberly-Clark Corporation house organ.

Berkeley Mills, Inc., now a wholly-owned subsidiary, is the latest addition to the International Cellucotton Products Company family. The mills, formerly known as Balfour Mills, were acquired in June, 1946. E. A. Smyth is president and manager. H. T. Rindal, formerly with the Kimberly-Clark staff engineers at Neenah, is assistant manager, and J. A. Smyth is superintendent.

Balfour Mills were manufacturers of cotton print cloth which was used for dress goods and shirting in normal times. Its entire production during the war was on high priority for use by the army, navy and certain industries.

The change-over program to adapt the mills to production of gauze was started in August, 1946, and all of the 485 looms were converted before February of this year. Installation of new equipment is expected to be completed by the end of the current year.

A new building is being constructed to house the modern cotton opening equipment scheduled for delivery in the third quarter of the year.

The entire weekly production of 1,200,000 full width yards of gauze is sent to the Kendall Company to be finished, split and shipped to the Kotex converting mills.

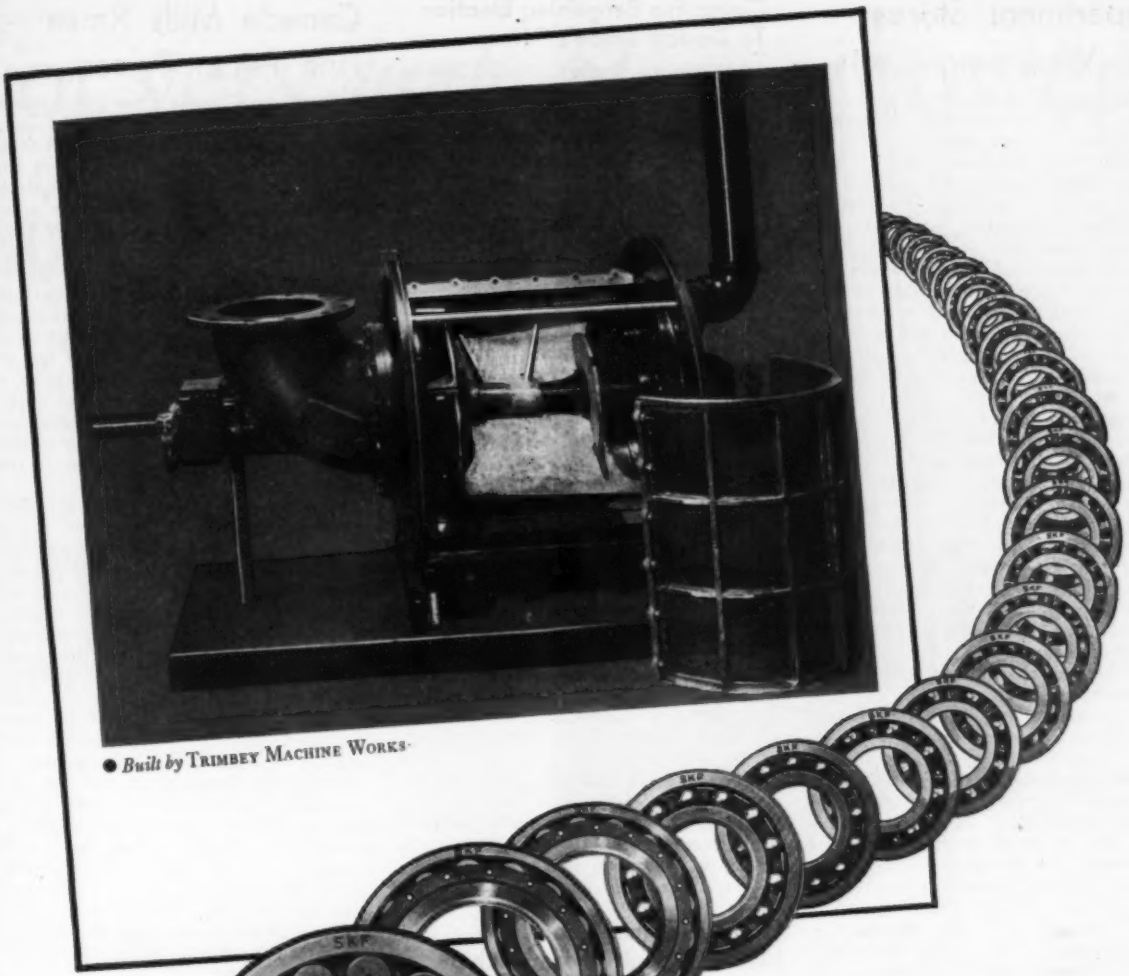
Mengel Moves Into New Box Plant

FULTON, N. Y.—The H. K. Ferguson Company has completed a new corrugated box manufacturing plant for the Mengel Company. The new plant is 400 feet long and 158 feet wide and contains approximately 70,000 square feet of floor space. The building has brick, concrete block and steel sash walls. A structural steel frame supports a composition roof over a precast concrete slab. Outside bays in the plant are 20 by 45 feet while center bays are 20 feet by 60 feet.

The Ferguson Company was in charge of both the design and construction programs.

Loroco Plans Expansion Program

READING, Ohio — Harry R. Rozin, vice-president in charge of sales of Loroco Industries, Inc., paper manufacturers and converters, has planned a general expansion program designed to increase the efficiency and production rate of operations. Preliminary steps include the appointment of Carl H. Gildehaus, formerly with Diem and Wing Paper Company, Cincinnati, as assistant sales manager, and Roy W. Schlensker, as head of the estimating department.



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HELPING TO MEET THE PAPER SHORTAGE

The paper shortage is a national problem that paper manufacturers are striving to solve with machines that depend upon antifriction bearings. One of these machines is this Trimbey Centrifugal Pulp Screen which, driven by a 40 h.p. motor at 400-465 r.p.m., is rated for a daily capacity of 30 to 40 tons of ground wood with 0.4 to 0.5% consistency and other capacities varying approximately with the character of pulp being handled. On its main shaft are SKF Spherical Roller Bearings—the self-aligning, self-contained bearings that assure peak load carrying capacity at all times. Add the advantages of SKF to *your* machines by insisting upon bearings with the trademark "SKF". 6255

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Department Stores Cut Wrapping Costs

CHICAGO—Of interest to the paper trade is the news that department stores here are attempting to curb rising costs of wrapping paper, setup boxes, twine, corrugated cartons and other packing materials by training employes to eliminate waste. At least one big store has specially designed bags for merchandise which eliminates waste of wrapping materials in odd-shaped bottles. All are reported to have resorted to notion and millinery bags in order to cut their use of wrapping paper and speed the packaging procedure for clerks.

Budget limitations are keeping most purchasing agents from buying too far in advance, but efforts are being made to buy as far ahead as possible if the prices are "reasonable." According to Womens Wear Daily, purchasing agents expect the supply and price problem in these materials will continue serious for a minimum of two years, according to some, and for a maximum of five years, according to the most pessimistic.

Some stores issue bulletins telling the superintendents the sizes of bags, wrapping paper and types of cordage best suited for items in each department. Supply departments are then instructed to issue only those sizes to the individual departments. Representatives of the purchasing departments are constantly in touch with the various departments to determine whether or not the correct wrappings are being used. If the employes waste paper in certain departments, the manager is then responsible for calling the individual employee and pointing out the errors made.

New developments in wrapping procedure are quickly relayed to the needed points in many Chicago retail stores. Special designs for odd-shaped and breakable boxes are consistently showing up and the entire wrapping procedure in many stores, formerly little noticed during the easier years, is going to get a thorough revamping before many months go by.

French Paper Men Visit Wisconsin Mills

GREEN BAY, Wis.—Three executives of French paper mills are planning to inspect mills in Green Bay and Appleton on May 19 as representatives of the French paper manufacturing industry, it was announced last week. They are Rene Sibelle, E. DeGuilebon and Pierre Martin. They will be accompanied by the tour director of a New York travel agency.

The visitors will see the Fort Howard, Hoberg and Northern paper mills here, and the Institute of Paper Chemistry and two or three mills at Appleton. After leaving the Fox river industrial area they will go to Rhinelander, where they are expected to visit the Rhinelander Paper Company.

Collective Bargaining Election To Decide Union's Future

WISCONSIN RAPIDS, Wis. — Supervisory employes in the production and maintenance departments of Consolidated Water Power and Paper Company were scheduled to have a collective bargaining election Wednesday, May 14, in the Wisconsin Rapids city hall. The results will determine whether the company will bargain with a local foremen's union which was chartered by the International Brotherhood of Paper Makers (AFL) more than a year ago. Divisions affected were Wisconsin Rapids, Plastics, Biron, Wisconsin River and Stevens Point. The election was ordered by the regional office of the National Labor Relations Board at Minneapolis, Minn.

Brown Budge Mills Sets Up Machinery

TROY, Ohio — The Brown-Bridge Mills, Inc., has moved most of the finishing machinery into its new $175,000 one-story brick-concrete-steel factory building on East Water St., adjoining its old plant. The new addition makes possible straight-line production of gummed paper products, with machinery placed for greater efficiency, according to James A. Shartle, president of the concern.

The B & O Railroad will extend its switch tracks to the rear of the building, giving the firm room for several more cars on its switch and enabling it to unload much more paper at one time.

Paper & Twine Association Nears Capacity Membership

CHICAGO—The Paper & Twine Association has about reached capacity membership according to reports listing a large number of new members including many from Chicago. Latest acquisitions to the fast growing club, from this area, are Russ Vogel, Mid-States Gummed Paper Company; R. A. Stough, Robert A. Stough & Company, and the Intercity Box and Paper Company of Freeport, Illinois. All will be formally welcomed into the association at the annual meeting of the Paper & Twine Association to be held, as usual, at French Lick Springs, Indiana, June 20 and 21.

D. J. Murray Reelects Boyce

WAUSAU, Wis.—Fred C. Boyce was reelected president of the D. J. Murray Manufacturing Co., at the annual meeting April 24. With him the following officers were also elected: M. P. McCullough, vice-president; C. E. Staky, executive vice-president and general manager; A. W. Plier, secretary and assistant general manager; J. S. Alexander, treasurer.

The directors elected in addition to Messrs. Boyce, McCullough, Staky and Alexander are D. C. Everest, G. L. Ruder, and Grover Keeth.

Canada Mills Raise Fine Paper Prices

TORONTO—Canada's fine paper manufacturers, effective this week, have raised the price of their products from 5 percent to 8 percent. This is the fourth boost in prices since controls went into effect in 1941. The other price increases were obtained in April 1946, June 1946, and in January 1947.

Domestic prices for book papers were increased $10 a ton at the carload level (subject to adjustment on certain grades). Litho papers and offset were increased $15 a ton because of special cost factors pertaining to those grades. There will be varying increases applicable to coated papers, depending on kind and quality. At mid-week manufacturers were still working out details of changes.

Fine paper producers point out that there was a price increase of $12 a ton on pulps, effective April 2, and that usually, from 105 to 110 pounds of pulps are used for 100 pounds of paper. Further, during the past month, new wage agreements have been negotiated with employees involving large increases in payrolls (including workmen's compensation and similar charges) of not less than 20 percent. Increased costs of other materials and supplies continue to be encountered.

Provincial Paper, Ltd., in its announcement to customers, states: "We are alert to the general undesirability of further increasing prices, but it will be apparent to all that the sum of the foregoing increases in costs makes some rise in price imperative. In taking such action to the least practicable extent, a substantial "squeeze" will be absorbed.

Knowles Associates Set Up Engineering Service

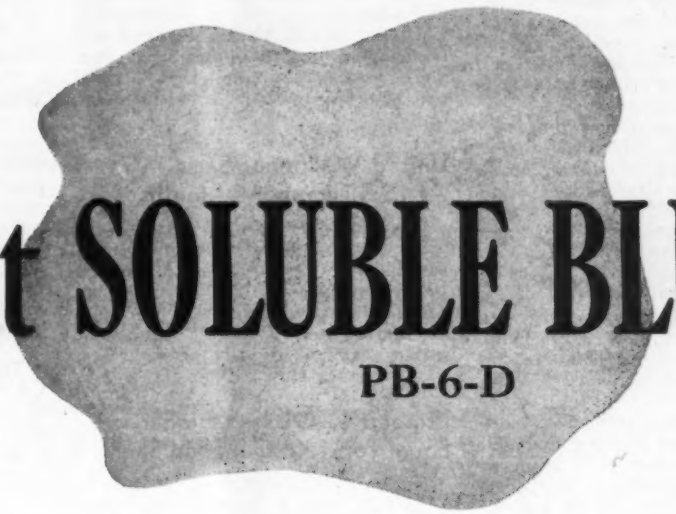
NEW YORK—Dr. Chester L. Knowles has formed the Knowles Associates, a group of chemical, process, and design engineers with offices at 19 Rector Street. Dr. Knowles was with the Dorr Company for many years, and more recently was technical director of the Process Equipment Division of General American Transportation Corporation.

Associated with the organization are well-known engineers with experience in general chemical, cement, coal, pulp and paper, and metallurgical industries. This group has a background of mechanical, design, process development and plant operation in these and allied industries.

O. R. Kuster has resigned as chief engineer of General American's Process Division and has joined Dr. Knowles in New York to handle general chemical and metallurgical plant design.

R. C. Ried, formerly with the Valley Forge Cement Company and the Separation Process Company, will be in charge of cement mill, coal cleaning and similar projects.

For very *high coloring* power at very *low cost*... use



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Soluble Blue PB-6-D has excellent lightfastness. This shows to good advantage in blotting paper, twisting paper, lining stock . . . and any beater applications where a low-cost blue with good light resistance is required.

PB-6-D is standardized for color and strength in beater paper coloring. And you can count on it for uniformity.

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BETTER THINGS FOR BETTER LIVING
...THROUGH CHEMISTRY

FINANCE

National Container Plans Stock Split

LONG ISLAND CITY, N. Y.—A resolution will be presented to National Container Corporation stockholders at the annual meeting on June 23, authorizing an increase in the company's common stock from 1,500,000 to 4,000,000 shares. If the resolution is adopted, it is the intention of the board of directors immediately to vote to split the company's stock on a basis of three for one.

The company is now installing machinery for the manufacture of corrugated paper boxes in existing space of the Tomahawk Kraft Paper Company at Tomahawk, Wis., which to date has been a manufacturer of kraft pulp and kraft board. When the installation of machinery is completed, which is expected within a few weeks, the Tomahawk subsidiary will become a completely integrated kraft pulp, kraft board mill and box plant serving the company's customers in the midwest area.

The company has authorized construction of a large addition and will commence construction of it adjacent to the present mill buildings at Tomahawk. This additional space will be used for manufacturing corrugated paper boxes. The installation of additional box making machinery will commence as soon as this construction is completed, which is expected within five months. When these installations are complete, the box division at Tomahawk will be one of the company's major operations. The major portion of the kraft board produced at the Tomahawk mill and Ontonagon, Mich., mill, operated by the Ontonagon Fibre Corporation, a wholly-owned subsidiary, will be converted in this new Tomahawk plant in the manufacture of corrugated paper boxes.

National Container Corporation and its subsidiaries presently operate pulp and paper board mills at Jacksonville, Fla.; Big Island, Va.; Tomahawk and Ontonagon, and box manufacturing plants at Jacksonville, Long Island City, Bradford, Chicago and Oakland, Cal.

United Wallpaper Sales At 15 Million For 9 Months

CHICAGO—Net sales of United Wallpaper, Inc., and domestic subsidiaries for the nine months ended March 31, 1947, were $15,800,762. Net profits before taxes were $2,453,800. Net profits after taxes were $1,499,047, equivalent to net earnings of $1.21 per share on common stock outstanding.

Kimberly-Clark Net Higher Equal To $1.48 Common Share

NEENAH, Wis.—Net sales of $21,122,576.31 and a net income, after taxes, of $1,957,826.57 was announced May 7 for the quarter ended March 31 by Kimberly-Clark Corporation and its Canadian subsidiary. The net income, after deduction of $185,227 for preferred stocks dividends, is equivalent to earnings of $1.48 for each of the outstanding 1,199,520 shares of common stock and compares with an earning of 54 cents for the corresponding period of last year.

United States, Wisconsin and Canadian income taxes for the quarter were estimated at $1,124,839.22 on the first quarter's earnings.

Tileston & Hollingsworth Secure $300,000 Loan

BOSTON, Mass.—Tileston & Hollingsworth have announced the private sale to the New England Mutual Life Insurance Company of a promissory note for $300,000. The note bears a rate of 3¾ percent and is payable in installments to May 1, 1962.

The loan, made through Chace, Whiteside, Warren & Sears, Inc., will be used for a construction and improvement program at the company's plant in Hyde Park, Mass. The company is the oldest paper company now operating in the United States and is the successor corporation to a business founded in 1728.

Abitibi Dividend Set At $6.25 A Share

TORONTO—Abitibi Power and Paper Co., Ltd., will pay a dividend July 1 of $6.25 a share, according to an announcement last week. The distribution will be on the $2.50 prior preferred shares to shareholders of record June 16.

These shares were issued to the holders of the company's old seven percent shares and dividends which have been accumulated since Jan. 1, 1945. The present payment consequently pays up all dividends to date.

This makes the first dividend paid by the Abitibi company since 1931.

FINANCIAL RECORD OF THE WEEK

New York Stock Exchange

High, Low and Last for Week Ending May 10, 1947

STOCKS

	High	Low	Last
A. P. W.	4⅝	4⅝	4⅝
Armstrong Cork Co.	44¾	43¾	43¾
Armstrong Cork Co., pf.	105	104⅞	105
Celotex Corp.	24½	23	23
Celotex Corp., pf.	21⅝	20⅞	20⅞
Certain-Teed Products Corp.	15⅝	14⅛	14⅛
Certain-Teed Products Corp., pf.	....	....	....
Champion Paper & Fibre Co.	21⅞	21	21
Champion Paper & Fibre Co., pf.	....	....	....
Congoleum Nairn Co.	26	25¾	25¼
Container Corp. of America	39	36½	37½
Crown Zellerbach Co.	27⅜	26⅛	26¾
Crown Zellerbach Co., pf. 4.20	105¼	104½	104⅞
Crown Zellerbach Co., 4 pf. 4	111	110	110
Dixie Cup Co	28	27½	27½
Dixie Cup Co. A	54	53	53
Flintkote Co.	28¾	26⅜	26½
Flintkote Co., pf.	107¼	107	107¼
Robert Gair	6⅞	6½	6⅝
Robert Gair, pf.	20½	20⅛	20⅛
International Paper Co.	43⅜	42	43⅜
International Paper Co., pf.	103	103	103
Johns Manville Corp.	120	118	118⅝
Johns Manville Corp., pf.	112½	112½	112½
Kimberly-Clark Corp.	25	24	24⅛
Kimberly-Clark Corp., pf.	108½	106½	107
Mac Andrews & Forbes	36½	36½	36½
Mac Andrews & Forbes, pf.	....	....	....
Marathon Corp.	23⅜	21½	21⅜
Mead Corp.	21⅜	19¾	19¾
Mead Corp., pf., 4¼	101½	100	100
Mead Corp., pf. 2	47½	47½	47½
National Container Corp.	40⅜	38½	38¼
Paraffine Companies, Inc.	72	70½	70½
Paraffine Companies, Inc., pf.	....	....	....
Rayonier, Inc.	21½	20¾	21¼
Rayonier, Inc., pf.	37¼	36⅞	37¼
Ruberoid, Co.	50	48⅞	48⅞
Scott Paper Co.	44	42⅞	43¼
Scott Paper Co., pf.	98⅛	97¼	97¾
Sutherland Paper Co.	40¼	39⅜	39⅜
Union Bag & Paper Corp.	30¼	29	30
United Paperboard Co.	15½	15	15
U. S. Gypsum Co.	97¾	92¾	92¾
U. S. Gypsum Co., pf.	....	....	....
West Virginia Pulp & Paper Co.	38½	36½	36½
West Virginia Pulp & Paper Co., pf.	111½	110½	111

BONDS

Abitibi Pulp & Paper Co., 5s '53	....	....	....
Celotex Corp., 3½s '60	106	106	106
Certain-Teed Products Corp., 5½s '53	....	....	....
Champion Paper & Fibre Co., 3s '65	....	....	....
Mead Corp., 3s '66	103½	103½	103½

New York Curb Exchange

High, Low and Last for Week Ending May 10, 1947

STOCKS

	High	Low	Last
Great Northern Paper Co.	41	40½	40½
Hummel Ross Fibre Corp.	....	....	....
St. Regis Paper Co.	9⅛	8⅝	8⅝
Taggart Corp.	9	9	9

BONDS

American Writing Paper Co., 6s '61	....	....	....

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BY WEIGHT

IN PLACE OF

BY VOLUME!

FOR the convenience of our pulp and paper industry customers, the concentrations of Becco Hydrogen Peroxides are now classified *by weight* rather than *volume!* We feel certain this will meet with the approval of the chemists in the pulp and paper industry. For example, Becco will supply industry with 27½%, 30%, 35%, 50% and 90% Hydrogen Peroxide, *by weight,* a variety sufficiently wide to meet any bleaching requirement.

And remember that Becco's engineers and chemists are qualified to give valuable advice on groundwood pulp bleaching as a result of many years of specialized experience. Why not ask them to advise you what concentration is best suitable to your particular bleaching requirements to assure the greatest degree of brightness and the finest finished product? You will be under no obligation. Write to:

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Mando Program at Fort Frances Provides for Groundwood Papers

FORT FRANCES, Ont. — The comprehensive modernization and improvement program for the local mill of the Ontario - Minnesota Pulp and Paper Company Limited received new impetus last week in the form of authorization to spend an additional $750,000, bringing to more than $1,500,000 the total cost of the program thus far. According to J. F. MacKellar, resident manager, several of the many new projects are designed to equip the plant for the production of higher grade papers. Some of the items included will provide necessary expansion for more efficient operations and some are for improvements to existing facilities deferred during a period of severe material shortages.

Heading up the new program is the modernization of No. 6 paper machine, rehabilitating this machine, initially installed in 1914, from the production of newsprint to the manufacture of high grade groundwood printing papers. The decision to convert this machine to printing paper production was made to place Mando in a more favorable position in the competitive field.

The complete modernization of the No. 6 paper machine, which is substantially in the same condition as when originally installed in 1914 for the manufacture of newsprint, includes a new slice, improvements to the Fourdrinier, and the installation of a suction couch. It is also proposed to modernize the press section and install a smoothing press, which will permit the installation of six more paper dryers to the present twenty-eight. A new Pope type reel and Cameron winder will also be installed at the dry end. Another feature of this modernization will be the substitution of a new modern electric drive on this machine for the present steam driving power.

MacKellar stated that construction is expected to start immediately on Rainy River pollution elimination facilities to recover and dispose of bark fibers and other refuse resulting from woodroom operations, some of which formerly escaped screens and entered the river. Installation of the improved screens will recover all wood room refuse which will then be pressed to remove excess water and conveyed to a specially designed boiler furnace to be burned. This is the result of the continuing studies by company engineers in a long range program for the maximum elimination of mill wastes in the interest of the local communities and those located downstream from the manufacturing operations. In addition, a Sveen-Pederson Save All unit will be installed to further reclaim fibers, preventing them from entering the river along with the excess white water.

Also included in this vast over-all modernization and improvement program, to be started soon or now in various stages of completion are the following projects:

The Fort Frances steam plant is equipped with two boilers which produce 42,000 pounds of steam per hour, two other boilers of 26,000 pounds per hour capacity, and one of 40,000 pounds per hour capacity. Plans are completed to replace the two smaller boilers with a single unit producing 85,000 pounds of steam per hour. This new unit which is of the most modern type is automatically controlled. It is to be stoker fired, is complete with water walls, superheaters, and utilizes forced and induced draft equipment.

With the completion of a new mill and logging stores building now under construction in the lower mill yard, the distribution of all logging stores will be transferred to the Fort Frances mill. This new building, 50 by 126 feet, built to a height of 18 feet, will also house part of the mill stores now handled in the basement of the mill. A new refrigerating unit will be included in this building providing 550 cubic feet of storage space for the perishable logging supplies. The installation is being started this week. Platforms will be built on the west side for box car loading and unloading and on the east side for truck handling.

In line with this expansion program additional barking drum facilities are in the process of construction to provide for an additional barker to be installed in the Fort Frances wood room supplementing the five existing drums now barking the wood. With six drums available the possibilities of shutdown due to mechanical trouble will be drastically reduced, insuring continuous operations.

The extension of the shipping room and the finishing floor finished last June gives the necessary floor space for the storage and assembling of completed orders and the manufacture of paper into finished sizes as required by the customer. This extension was mainly prompted by the decision to run high grade groundwood specialty papers to be run on No. 6 machine requiring considerably more sheeting and storage than was formerly the case. The company has purchased a modern guillotine-type ream cutter for the specialized sheeting of high grade printing paper.

Required extensions of the present grinder room were accomplished to accommodate one additional three-pocket grinder which was added to the line of five grinders, utilizing the surplus power capacity of a 3,500 h.p. motor already driving the five. Construction is under way to house eight additional three-pocket grinders. They are to be set up in two lines of four each, which increases to fourteen the number of stones available to produce the quality and quantity of higher grade pulp desired.

This increased capacity will require considerable revamping of the existing pond feeding system of supplying wood to the pocket grinders. This feeding system will be so arranged that its storage capacity will be increased to accommodate a four hour supply of wood for the fourteen operating stones. Undue handling of wood will thus be avoided. Additional coarse screening and pumping facilities are being installed as well. New locker space, complete with showers and wash basins, will be provided in this extension. This will accommodate both the existing workmen and all additional grindermen needed to effectively man the additional grinders.

To replace the former weighted rolls a suction press roll was added to No. 7 paper machine. This press was installed to increase the dryness of the flowing paper web by 2 percent, raising the percentage dryness to 30 percent before the sheet enters the steam dryers.

With the establishment of a permanent logging division in Fort Frances, an increase in personnel has been necessitated which requires additional office space. Upon completion of a new one-story addition the logging staff, now quartered in the Prince Albert Hotel, will be incorporated with the general offices.

Other projects supplementing this program involve the continuation of the rebuilding of No. 5 paper machine for its conversion to groundwood paper manufacturing. The sulphite decker chest will be provided with tile lining and agitation thereby assuring a cleaner supply of sulphite pulp for the manufacture of printing papers.

National Container Expands Tomahawk Kraft Plant

TOMAHAWK, Wis. — Samuel Kipnis, president of National Container Corporation, announced in New York last week the installation of additional machinery at the Tomahawk Kraft Paper Company for the manufacture of kraft, pulp, draft board and boxes. The local company is a subsidiary of National Container.

Kipnis said that after installation has been completed Tomahawk will be the largest completely integrated plant of its kind in the northern part of the country. He also said that construction of an additional building would be started within five months.

Stockholders will be asked to approve an increase in National Container's common stock from 1,500,000 to 4,000,000 for the purpose of a three for one stock split, Kipnis stated. National Container has nine plants in various parts of the United States.

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Consolidated Boosts Vacations and Wages

WISCONSIN RAPIDS, Wis.—A 10-cent hourly increase for about 3,000 hourly workers in the six divisions of Consolidated Water Power and Paper Company, was announced May 7 with the signing of the twenty-eighth annual labor agreement between the company and representatives of the various American Federation of Labor unions. Negotiations were begun April 16 and were completed May 5.

The new contract is effective May 1, and provides double time for work on Sundays and the following holidays: New Year's, Memorial Day, Fourth of July, Labor Day, Thanksgiving and Christmas. Employes with one year or more of service will receive a vacation of one week with 44 hours pay and those with five years or more will receive two weeks with 88 hours pay.

The 10-cent increase brings the base rate for male workers to $1.05 an hour and for women to 95 cents.

Stanton W. Mead, director of manufacture, and Leo J. Barrette, general personnel manager, represented the company in the negotiations, with advice on operating problems from the following mill managers: C. E. Jackson, Wisconsin Rapids division; W. E. Beadle, Biron division; J. A. Rush, Stevens Point division; William J. Foote, Wisconsin River division; L. E. Smith, Interlake division at Appleton; and D. G. Rowland, Plastics division.

The unions involved were the International Brotherhood of Pulp, Sulphite and Paper Mill Workers, International Brotherhood of Paper Makers, International Brotherhood of Electrical Workers and International Association of Machinists.

It was also announced May 7 that a general 20-cent hourly increase for the Construction and General Laborers Union Local 918 has been negotiated with Consolidated. The increase brings the wage scale up from 90 cents to $1.10 per hour. The first 10 cents was made retroactive to March 4, 1947, and the other 10 cents effective May 1.

Waste Prices Sag in Holyoke

The waste paper market is on the down slide in the paper making city of Holyoke, Mass. For the first time since the early days of the war, there is more than enough waste paper on hand to keep consuming paper mills in that area operating at capacity. Waste paper prices that skyrocketed to astronomical heights early in the year hit a top level last month and are now declining. Paper industry leaders say this is the tipoff that the wild rush of business, that has kept the Holyoke paper mills operating at capacity for the past six years, will taper off. The price of mixed waste paper in Holyoke has dropped from $23 a ton to $17, and waste newsprint has declined from $26 to $21 a ton.

Nekoosa-Edwards Employees Have Long Service Records

PORT EDWARDS, Wis. — Fourteen Nekoosa-Edwards Paper Company employes have 40 years of service or more with the company. The oldest is William F. Krehnke, with 56 years of continuous service. Others are Frank Pilot, 51 years; Richard Gotz, 50; Herman Zurfluh, 49; C. A. Jasperson, 48; Fred Fahl and August Gaetke, 47; Percy George, John J. Podvin, Sr., and James Mlsna, all with 45; Einar G. Ross, 44; Hans Hostvedt, 43; F. R. Goddard, Sr., 41; and Charles Millenbah, 40.

Nepco also has 23 more who have been with the company 30 to 40 years, and 115 with 25 to 30 years of service.

Alling & Cory Buys Donaldson Business

HARRISBURG, Pa.—The Alling & Cory Company has purchased the Donaldson Paper Company of Harrisburg, effective May 1. The initial negotiations for the purchase had been with Mr. Donaldson, the late owner.

The Harrisburg branch will be under the immediate direction of the Pittsburgh Division and under the local supervision of A. M. Keown, resident manager. Mr. Keown has represented the company in Harrisburg area for over thirty-six years and is well acquainted with the territory.

Thilmany Executives Address Thilco Foremen's Club

KAUKAUNA, Wis.—Three executives of the Thilmany Pulp and Paper Company addressed the Thilco Foremen's Club last week at the Elks clubrooms. C. R. Seaborne, vice-president in charge of manufacture, discussed the labor and manufacturing problems of the mill. E. H. Jennings, vice-president in charge of sales, reviewed development and present outlook for the paper industry as a whole, and Karl E. Stansbury, president of the company, discussed the role the foremen would necessarily have to play in order to maintain this position.

Portable X-Ray Unit Aids TB Campaign

KIMBERLY, Wis. — The Wisconsin State Board of Health installed a portable X-ray unit from Tuesday through Friday, May 13 to 16, in the first aid room of the local mill of Kimberly-Clark Corporation. A similar unit appeared here about three years ago, and this is a follow-up by the state board in its war against tuberculosis. Foremen contacted workers on the time the latter were scheduled to have their examinations. From two to three weeks after the X-ray has been taken, a report will be mailed to the individual, showing the results.

SAPEYES Inaugurate New Speaker Series

CHICAGO—Following up on its interesting series of meetings on customer relations, the western division of the Salesmens Association of the Paper Industry is now in the midst of a series of closed meetings wherein speakers of prominence in related industries are the guests of honor. The first of the series was held on Monday, May 5, at the Hotel Sherman with George Cullinan, vice-president of Aldens, Inc., as the speaker. Cullinan has wide experience in the catalog production and sales departments of his company and he supplied his audience with an excellent picture of the problems of mail order catalog production, including procurement of supplies, necessary requirements, et cetera.

On May 12 the noon meeting at the Sherman was given over to Carl Mellick, sales manager of the Miehle Printing Press & Manufacturing Company, who discussed the problems of his industry as they relate to paper and allied products. On May 19 plans call for the appearance of H. J. Jensen, secretary-treasurer of Frederick A. Stressen-Reuter, Incorporated.

A week ago the SAPEYES also finally got "Pat" Patterson of Flambeau down from the Flambeau mills long enough to present him with a beautiful wrist watch, genuinely earned while Pat served as president of the Western group. It was a dual celebration for Patterson, inasmuch as he recently became vice-president in charge of sales of the Flambeau Paper Company.

Two new members were also welcomed into the western division. They are Leslie Ferris of Consolidated Water Power and Paper Company and Charles Patten of West Virginia Pulp and Paper Company.

Upson Declares Dividends

Dividends on both the common and preferred stock of The Upson Company, manufacturers of wall and ceiling panels and fiberboard specialties, have been declared by company directors. A dividend of 25 cents a share on the common stock will be payable on June 2 to stockholders of record of May 15, and the usual quarterly dividend on the 4½ per cent series preferred stock will be payable on July 1 to stockholders of record on June 6.

Sales and earnings of the company for the first four months of 1947 compares favorably, Mr. Upson announced, with those of the corresponding period of 1946.

Traffic League Meeting Set for Poland Spring

BOSTON, Mass. — The Pulp & Paper Traffic League are to have their annual meeting June 18-19 at the Poland Spring House, Poland Spring, Me.

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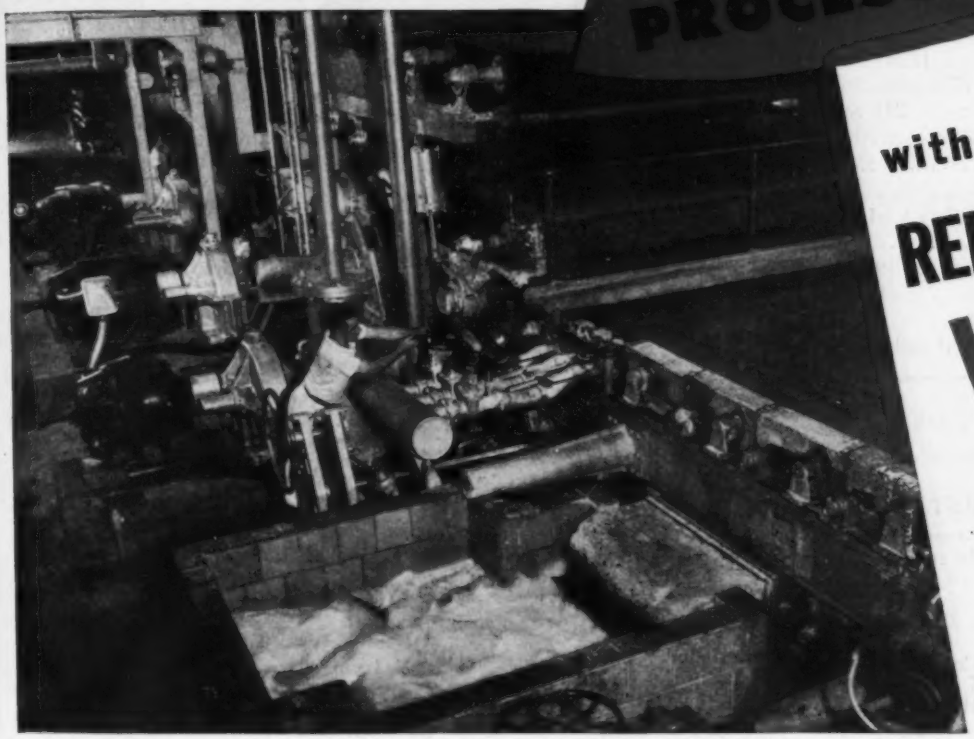

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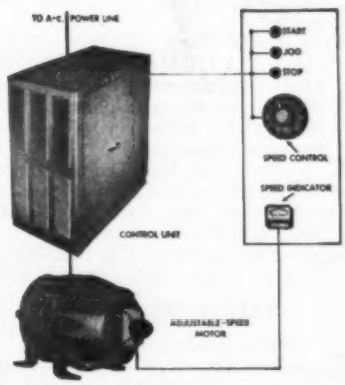

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Quick, smooth starting and stopping, stepless speed changing and maintenance of proper tension are handled by the *All-electric, Adjustable-speed Drive* right from your plant's A-c. circuit. Through automatic or manual control—at the machine or from remote stations—Reliance V★S Drive brings unlimited flexibility to any processing operation. Thousands of installations are proving every day that V★S on the job means greater production and lower costs. That's why it will pay you to write today for Bulletin 311-A which contains more important facts about V★S Drive.

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RELIANCE A-C D-C MOTORS

IMPORTS

NEW YORK IMPORTS

WEEK ENDING MAY 10, 1947

SUMMARY

Cigarette Paper	5 cs.
Newsprint	12,541 rolls
Wrapping Paper	2771 rolls, 3 cs.
Sulphite Paper	221 rolls
Coated Paper	70 cs.
Gummed Paper	55 cs.
Drawing Paper	7 cs.
Writing Paper	11 cs.
Filter Paper	38 cs.
Strawboard	6095 pkgs., 19 rolls
Photo Paper	164 cs.
Bristol Boards	3 cs.
Miscellaneous Paper	301 rolls, 28 cs.

CIGARETTE PAPER

Suarez & Crespo, Extavia, Alicante, 5 cs.

NEWSPRINT

Bowater Paper Co., Cornerbrook, Cornerbrook, N. F., 4235 rolls.

Bank of The Manhattan Co., Cornerbrook, Cornerbrook, N. F., 43 rolls.

News Syndicate Co., Colabee, Baie Comeau, 6969 rolls.

Madden Reeve Angel Co., Inc., Dothan Victory, Hango, 595 rolls.

(———), Domfront, Havre, 699 rolls.

WRAPPING PAPER

E. W. Twitchell, Inc., Dothan Victory, Hango, 2458 rolls.

E. M. Warburg, Inc., Tunaholm, Gothenburg, 130 rolls.

The Borregaard Co., Inc., Tunaholm, Gothenburg, 62 rolls.

Viking Paper Co., Inc., Tunaholm, Gothenburg, 30 rolls.

Cohoes Envelope Co., Inc., Tunaholm, Gothenburg, 91 rolls.

Potdevin Machine Co., American Leader, 1 cs. (transparent).

Meadows Wye & Co., American Importer, London, 3 cs. (waxed).

SULPHITE PAPER

Resolute Paper Products Corp., Tunaholm, Gothenburg, 221 rolls (white sulphite).

COATED PAPER

F. P. Gaskell Co., Inc., American Leader, Liverpool, 70 cs. (for cigarette tipping).

GUMMED PAPER

B. F. Drakenfeld & Co., Inc., American Leader, Liverpool, 55 cs.

DRAWING PAPER

H. Reeve Angel & Co., Inc., American Importer, London, 7 cs.

WRITING PAPER

American Express Co., Domfront, Havre, 3 cs.

Globe Shipping Co., Domfront, Havre, 8 cs.

FILTER PAPER

H. Reeve Angel & Co., Inc., American Importer, London, 38 cs.

STRAWBOARD

Kaufman Co., Eemdyk, Rotterdam, 799 pkgs., 19 rolls.

Joe Salwen Paper Products Corp., Eemdyk, Rotterdam, 4308 pkgs.

Wedeman & Godknecht, Eemdyk, Rotterdam, 1787 pkgs.

PHOTO PAPER

Eastman Kodak Co., Coastal Stevedore, Trujillo City, 5 cs.

Lep Transport Co., American Importer, London, 150 cs. (raw unsensitized).

(———), American Importer, London, 9 cs.

BRISTOL BOARDS

(———), American Importer, London, 3 cs.

MISCELLANEOUS PAPER

Resolute Paper Products Corp., Tunaholm, Gothenburg, 301 rolls.

R. H. Macy Co., Inc., Louis Hennepen, Havre, 28 cs.

RAGS, BAGGINGS, ETC.

E. J. Keller Co., Inc., Scott E. Land, Bombay, 200 bls. old jute rags.

(———), Scott E. Land, Bombay, 200 bls. jute rags.

Lush Cotton Products Co., Scott E. Land, Bombay, 100 bls. cotton waste.

Brandwein Mazur Co., Scott E. Land, Bombay, 400 bls. cotton waste.

Buffalo Batt & Felt Corp., Scott E. Land, Bombay, 300 bls. cotton waste.

New England Waste Co., Scott E. Land, Bombay, 81 bls. cotton waste.

(———), Extavia, Genoa, 3 bls. rags.

(———), Executor, Genoa, 93 bls. colored cotton rags; 420 bls. scrap burlap strips; 54 bls. old khaki webbing.

Continental Bank Trust Co., Executor, Leghorn, 138 bls. rags.

Grace National Bank, Port Halifax, London, 4 bls. paperstock.

Irving Trust Co., Port Halifax, London, 144 bls. old cotton canvas.

G. Grazi, Cape Isabel, Barranquilla, 424 bls. rayon waste.

E. Butterworth & Co., Inc., American Leader, Liverpool, 78 bls. old cotton rags.

W. J. Green Co., American Leader, Liverpool, 35 bls. khaki webbing.

Padawer Corp., Libreville, Shanghai, 200 bls. cotton waste.

Continental Bank Trust Co., Eemdyk, Antwerp, 114 bls. jute thread waste; 418 bls. jute waste.

E. J. Keller Co., Inc., Niagara Victory, Naples, 270 bls. dark cottons.

American Express Co., American Importer, London, 12 bls. new grey linen threads; 5 bls. new grey linen cuttings.

Tradesmans National Bank Trust Co., American Importer, London, 120 bls. old webbing.

O'Brien Products, Inc., Marchen Maersk, Shanghai, 300 bls. cotton waste.

D. M. Hicks, Inc., Marchen Maersk, Shanghai, 200 bls. cotton roof rags.

WOODPULP

Pulp Sales Corp., Dothan Victory, Hango, 1650 bls. prime unbleached strong sulphite pulp; 3525 bls. prime unbleached sulphite pulp; 130 bls. prime extra string sulphite pulp; 900 bls. prime unbleached kraft sulphate pulp.

Perkins Goodwin Co., Colabee, Baie Comeau, 3760 bls. unbleached sulphite pulp.

WOODPULP BOARDS

Jay Madden Corp., Dothan Victory, Hango, 391 rolls (solid white).

GLUESTOCK, ETC.

H. Remis, Cape Isabel, Barranquilla, 141 pkgs. dry hide cuttings; 116 rolls dry splits.

Herman Hollander, Temaraire, Cebu, 91 bls. dry gluestock.

D. A. Seidel, Libreville, Manila, 78 bdls. gluestock.

H. Remis, Mormacdove, Rio de Janiero, 244 pkgs. gluestock.

BOSTON IMPORTS

WEEK ENDING MAY 10, 1947

Irving Trust Co., Sea King, Alexandria, 157 bls. rags.

Manufacturers Trust Co., Sea King, Alexandria, 81 bls. rags.

E. Butterworth & Co., Inc., Union Victory, Rotterdam, 420 bls. picker waste.

PHILADELPHIA IMPORTS

WEEK ENDING MAY 10, 1947

J. B. Stetson Co., Extavia, Genoa, 8 cs. tissue paper caps.

F. Weber Co., Extavia, Genoa, 12 cs. drawing paper.

Bowater Paper Co., Cornerbrook, Cornerbrook, N. F., 5004 rolls newsprint.

Pulp Sales Corp., Dothan Victory, Hango, 11,421 bls. prime unbleached kraft sulphate pulp; 2497 bls. prime unbleached strong sulphite pulp; 250 bls. prime unbleached light and strong sulphate pulp.

E. W. Twitchell, Inc., Dothan Victory, Hango, 691 rolls wrapping paper.

Jay Madden Corp., Dothan Victory, Hango, 588 rolls wrapping paper.

Madden Reeve Angel Co., Inc., Dothan Victory, Hango, 490 rolls newsprint.

BALTIMORE IMPORTS

WEEK ENDING MAY 10, 1947

Cellulose Sales Co., Inc., Tunaholm, Gothenburg, 2400 bls. dry sulphite pulp, 400 tons; 930 pkgs. dry sulphite pulp, 171 tons.

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Add Calgon* to the clay slip for higher solids content and lower viscosities, with more fluid colors after the addition of adhesive.

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The supply of Calgon is still tight but we will be pleased to give you full information concerning the application of Calgon to the coating in which you are interested.

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TRENDS

Office of the PAPER TRADE JOURNAL,
Wednesday, May 14, 1947.

March output of paper and paperboard broke all previous records, totaling 1,801,399 tons. This was 172,282 tons above February and 36,906 tons over the previous high set in January this year. According to the Census Bureau, the increase was general in all grades with the biggest gains occurring in the book, fine, coarse, containerboard and bending board segments. Consumption of woodpulp in paper and board manufacture, at 1,126,519 tons, was 100,856 tons over the February figure and 13,785 tons above the former high in January. This continued high rate of consumption, plus a drop in receipts of pulp from Europe, brought a decrease of 13,982 tons in wood pulp inventories at paper and board mills. . . . Although increased demand for multi-walled paper bags has developed among dry ice plants, chemical manufacturers have been successful in getting continued prompt deliveries of bags for shipping dry chemicals. However, to protect future shipments, orders on these items are still being placed as far as six months ahead. . . . Reports from manufacturers indicate there is some increase in buyer resistance and that this resistance is becoming more widespread. Buyers are showing a tendency to "shop around" instead of taking the first thing offered and are refusing the more expensive, higher type papers in place of the grade actually wanted. At the same time converters and jobbers do not seem to expect an easing in the supply situation before the end of the year.

The index of general business activity for the week ended May 3 rose to 146.5 from 146.4 in the previous week, compared with 126.8 for the corresponding week in 1946. The index of paperboard production rose to 183.9 from 178.4 in the previous week, compared with 177.2 for the corresponding week in 1946.

Paper production for the week ended May 3 was estimated at 108.2 percent, compared with 105.3 for the preceding week, with 107.3 for the corresponding week in 1946, with 90.7 for 1945, with 88.9 for 1944, and with 90.6 percent for the corresponding week in 1943.

Paperboard production for the week ended May 3 was 102.0 percent of capacity, compared with 100.0 percent for the preceding week, with 101.0 for the corresponding week in 1946, with 97.0 for 1945, with 98.0 for 1944, and with 96.0 percent for the corresponding week in 1943.

Pulpwood receipts throughout the country during the early months of 1947, stimulated by generally favorable weather conditions, were substantially greater than in early 1946, according to regional observers of the Department of Commerce. Receipts normally follow an upward seasonal trend from late December through March. The South, where inclement weather limited pulpwood procurement during the winter of 1946, has recorded receipts so far this year comprising 47 percent of the nation's total of domestic pulpwood and is running well ahead of other regions, with the Appalachian and Pacific Northwest areas registering considerable gains over 1946 but at a relatively more moderate rate. The Northeast is well behind the overall rate of increase with the Lake States the only pulpwood region to show a decline from the first months of the preceding year, not only in receipts of domestic wood, but in a relatively greater degree in those of imported wood from Canada. The Northeast also experienced a sizeable falling off in imports, owing principally to a Canadian winter whose rigors were reported the most severe in 40 years. Consequent immobilization of many thousands of freight cars in Canada were a serious impediment to pulpwood shipments. . . . Miscellaneous regional pulpwood developments include reports from the Pacific Northwest that supplies of bulldozers and road making equipment are better than expected while trucks and tires are available in quantities not experienced for 5 years. Some Pacific Northwest producers who depend on the open market, concerned over the sectional rise in pulpwood prices, are discussing the possibility of opening up new pulpwood tracts in heretofore inaccessible regions.

Mills unable to meet the great consumption demands for coarse papers are forcing merchants in some sections of the country to use book paper for wrapping because of the scarcity of the latter grade. Kraft paper mills are currently producing a larger proportion of bag and other converting papers than in prewar years, which partially accounts for the scarcity of kraft wrapping paper. . . . Newspaper publishers and newsprint producers agree that Alaska is a good potential source of larger newsprint supply but look to the South as providing the greatest promise. The consensus seems to be that the Southern field is just waiting for some to use it, and to ignore such a ripe source would be foolhardy. . . . The paper shortage is really bad in Great Britain. Reprints of classics have been so neglected that a teacher wrote to the Times, complaining that he had been unable to find sixteen copies of Keats' poems for his class.

Incidentally, England consumed only 375,000 tons of newsprint in 1946 as compared to 1,200,000 tons in 1939. . . . Consumption of newsprint by publishers in the United States during March was 414,619 tons, which was 39,619 tons more than England consumed in all of 1946. The sharp rise in Canadian mill labor costs, coupled with increased costs of new wood, and prospective higher freight rates, have ruled out the possibility of a reduction in newsprint prices for the rest of this year. The new wood now being received by paper mills generally costs $3 to $5 a ton over last year's wood. Costs of making newsprint have been increased from $3 to $4 a ton as a result of wage rises granted recently by Canadian manufacturers. And there still remains the possibility of a 30 percent increase on freight rates, chiefly affecting Canadian shipments of wood and other raw materials to the mills.

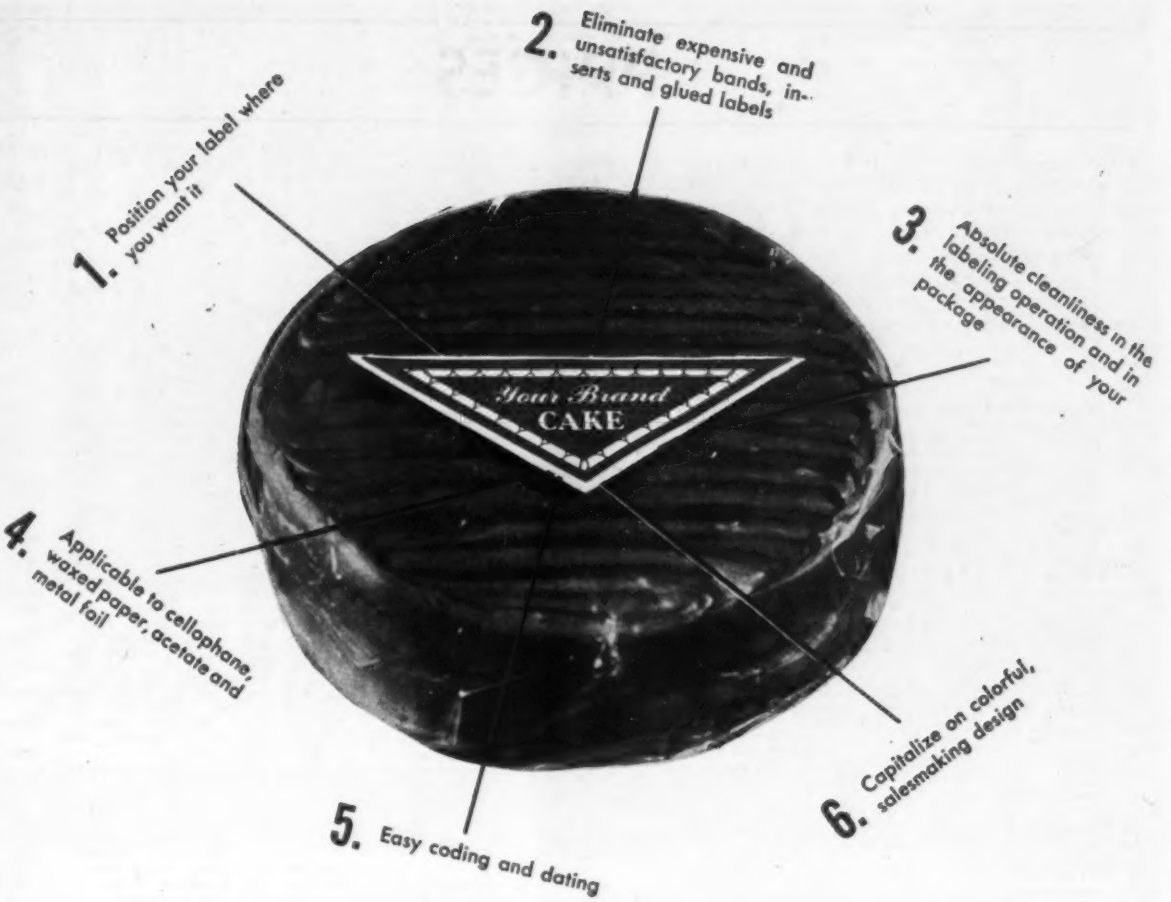
Wood Pulp

The challenging prospect that Northern European pulp may not again be available to the consumers of this country in prewar quantities will quite probably be neutralized to a considerable degree by augmented shipments from Canada. The latter country, motivated by urgent war and postwar needs, increased its pulp exports to the United States from an average of about 600,000 tons in the period 1937-39 to a total of 1,234,000 tons in 1946, accounting for 69 percent of our imports in that year.

With the well founded assumption that increasing imports of Canadian pulp will continue to fill the breach left by any permanent decline in supplies from Northern Europe, the latter contingency should not interrupt the natural growth of the domestic paper and paperboard industry over the long pull. As to basic North American pulpwood supplies, a more widespread adoption of forest practices based on the principal of sustained yield, should, in the judgment of the industry's leaders, result in a continuing and adequate supply of pulpwood from the forests of the United States and Canada. If the development of additional timber areas should be required, large formerly inaccessible forests potentially available to the United States industry, await exploitation.

Waste Paper

Collections for the first 17 weeks of this year were 9.3 percent above collections for the same period last year and 16.5 percent over collections in the corresponding period of 1945. More and more frequently dealers are able to meet demands of mills for container grades of waste paper. Eastern mills have been compelled to take some 15,000 tons of corrugated out of inventory since the beginning of the year.


1. Position your label where you want it
2. Eliminate expensive and unsatisfactory bands, inserts and glued labels
3. Absolute cleanliness in the labeling operation and in the appearance of your package
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PRICES

With the elimination of price controls on paper, pulp, rags and other materials, the quotations given below once more become indicative of trends in an open market. At the moment they can be of little more, for, while some volume business still is being done under contract at the figures given below, fluctuations representing special conditions are too varied and too frequent to permit prices to be given as representing a wholly stabilized market.

Paper

(Delivered New York)

Standard News, per ton—
Roll, contract ....$84.00 to $90.00
Sheets .....103.60 " 109.00

Kraft—per cwt.—Carload Quantities

Zone A, Delivered 40 lb. base weight			
Superstandard Wrapping	$7.00	to	—
No. 1 Wrapping...	6.50	"	6.75
Standard Wrapping	6.00	"	6.25
Standard Bag	5.75	"	6.25

Tissues—Per Ream 24x36 (480) 10 lb. Zone 1.

Wh. No. 1 Frd.....	1.35	to	1.65
Wh. No. 1 M. G....	1.35	"	1.65
Wh. No. 1½.....	1.20	"	1.45
Wh. No. 2	1.30	"	1.55
Wh. Anti-Tar	2.75	"	4.25
Kraft Unbl.	1.45	"	1.85
Manila No. 2	1.25	"	1.45

Toilet—Per Case of 100 rolls—1 M Sheets.

Unbleached	4.47	to	5.50
Bleached	6.50	"	—

Paper Towels—Per Case of 3750—Zone 1.

Wh. C. fold 11x13¼	4.39	to	4.80
Br. Sgl. fold 10 in.	2.67	"	3.00
Br. M'tif'd 9¼x14¾	3.78	"	4.15
Br. M'tif'd 9¼x9¾ .	2.67	"	3.00

Manila—per cwt.—C. l. f. a.

No. 1 Jute.....11.25	@	—	
No. 1 Manila 35 lb.	6.00	"	7.00

Boards, per ton—

News *75.00	@	81.50	
Chip *73.00	"	77.50	
Sgl. Mla. Li Chip*89.00	"	92.50	
White Pat. Coated*101.50	"	110.00	
Kraft Liners 42 lb.*84.00	"	95.00	
Binders Boards .. 94.00	"	126.00	

* Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following are representative of distributors' resale prices, all deliveries in Zone 1:

Rag Content Bonds and Ledgers—White, Assorted Items

	Bonds		Ledgers	
100% Rag Ext. No. 1	$48.00 to	$55.00	$40.90 to	$48.00
100% Rag	41.25 "	46.50	34.00 "	40.00
85% Rag	.... "	....	30.55 "	38.75
75% Rag	31.50 "	35.00	24.45 "	30.00
65% Rag	.... "	....	.... "	....
50% Rag	27.50 "	31.50	21.25 "	25.75
25% Rag	24.50 "	28.00	19.00 "	23.25

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items

	Bonds	Ledgers
No. 1	$15.50 " $17.75	$16.35 " $18.75
No. 2	14.50 " 17.00	15.50 " 17.75
No. 3	.... "	.... " ....
No. 4	14.00 " 16.00	14.25 " 17.00

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper

No. 1 Glossy Coated..	$18.60 to $19.40
No. 2 Glossy Coated..	17.35 " 18.15
No. 3 Glossy Coated..	17.00 " 17.65
No. 4 Glossy Coated..	Nominal
No. 1 Antique (Watermarked)	$14.25 to $14.90
No. 2 Offset	14.70 " 15.35
A Grade E. F.....	13.30 " 13.90
A Grade S. & S. C...	13.70 " 14.40
B Grade E. F.....	Nominal
B Grade S. C.....	Nominal
C Grade E. F.....	Nominal
C Grade S. C.....	Nominal
D Grade E. F.....	Nominal
D Grade S. & S. C...	Nominal

Ivory & India at $.50 cwt. extra.

Wood Pulp

Domestic mill prices delivered with former OPA freight allowances.

	Per Short ADT
Groundwood	$75.00 to $80.00
Unbleached Sulphite..	117.00 " —
Bleached Sulphite ..	121.00 " 125.00
Bleached Soda	115.00 " 120.00
Unbleached Kraft ...	112.50 " 120.00
Southern Kraft	90.00 " 102.50

Canadian mill Prices delivered with freight allowances unless otherwise specified:

	Per Short ADT
Select Unbleached Kraft (no freight allowance)	115.00 " —
Unbleached Sulphite..	115.00 " —
Glassine Unbleached Sulphite (no freight allowance)	112.00 " —
Bleached Soda	105.00 " 115.00
Groundwood	75.00 " 80.00
Sideruns Pulping News	75.00 " 80.00
Hardwood and Specialty Grades	Nominal

Swedish Quotations
Ex. dock, New York

	Per Short ADT
Bleached Kraft .....$150.00 to	156.00
Bleached Sulphite ... 151.00 "	158.50
Unbleached Sulphite.. 121.00 "	131.00
Unbleached Kraft .... 116.00 "	126.00

Finnish Quotations
Ex. dock, New York

	Per Short ADT
Bleached Sulphite	$165.00
Unbleached Sulphite	132.50
Unbleached Sulphite (special grade)	137.50
Unbleached Sulphate	132.50
Unbleached Sulphate (special grade)	159.00

New Domestic Cotton Cuttings

(Prices delivered Mill Plus Dealer's Commission)

White Shirt .....$11.50 to	$12.00
Light Silesias	7.50
Unbleached Muslin ... 11.50 "	12.00
White Back Blue Overalls	8.25
Blue Overalls	7.75
Unbl. Fancy Shirt.... 4.50 "	5.00
Light Percales ..... 5.50 "	6.00
Light Prints ..... 5.25 "	5.95
Washables	4.00
Bleachable Khaki .... 5.50 "	6.00
Unbleachable Khaki .. 5.00 "	5.50
Cottonades ..... 4.50 "	5.00

Old Domestic Cotton Rags

(F.O.B. Shipping Point Plus Dealer's Commission)

	Per 100 lbs.
No. 1 Whites Repacked.....	$5.00
No. 1 Whites Miscellaneous..	4.25
No. 2 Whites Repacked.....	4.00
No. 2 Whites Miscellaneous..	3.50
Blue Overalls	3.75
Thirds and Blues Repacked..	3.00
Thirds and Blues Miscellaneous	2.50
No. 1 Roofing Rags.....	2.20
No. 2 Roofing Rags.....	2.10
No. 3 Jute Bagging.....	2.00
No. 4 Brussels and hard back carpets	2.00
No. 5A Roofing Rags.....	2.00

New Foreign Cotton Cuttings

(Prices delivered Mill)

	Per 100 lbs.
New Dark Cuttings....	$6.00 to —
New Mixed Cuttings...	6.50 " —
Light Silesias	9.00 " 10.00
Light Flannelettes	8.00 " 9.00
New White Cuttings ..	13.00 " 15.00
Fancy Shirt Cuttings...	9.00 " 10.00
Light Prints	8.00 " 10.00
Bleachable Khaki, No. 1	7.00 " 7.50
Unbl. Khaki, No. 1....	6.25 " 6.75

Old Foreign Rags

(F.O.B. New York)

	Per 100 lbs.
No. 1 White Linens..	$14.00 to 16.00
No. 2 White Linens...	12.00 " 13.00
No. 3 White Linens...	8.00 " 9.00
No. 4 White Linens...	8.00 " 9.00
No. 1 White Cottons...	10.00 " 12.00
No. 2 White Cottons...	8.00 " 9.00
No. 3 White Cottons...	6.50 " 7.00
No. 4 White Cottons...	5.00 " 5.50
Extra Light Prints...	7.50 " 8.00
No. 1 New Light Prints	6.25 " 6.75
Med. Light Prints.....	5.25 " 5.75
Dutch Blue Cottons....	5.25 " 5.50
Checks and Blues.....	4.00 " 4.25
Linsey Garments	4.50 " 5.00
Dark Cottons	3.75 " 4.00
Old Shopperies	3.25 " 3.50
New Shopperies	3.25 " 3.50

Bagging

(Prices to Mill, f.o.b. N. Y.)

	Per 100 lbs.
Foreign Gunny, No. 1..	$4.75 to 5.00
Domestic Gunny, No. 1	4.25 " 4.50
Light Wool Tares.....	4.50 " 4.75
Heavy Wool Tares.....	4.75 " 5.00
Bright Bagging	4.25 " 4.50
Foreign Manila Rope...	6.00 " 7.00
Domestic Manila Rope	5.75 " 6.50
Jute Strings	4.50 " 5.00
No. 1 Sisal Strings ..	5.50 " 6.00
Mixed Strings	1.75 " 2.50

Waste Paper

Prices to Mills
(Dollars Per Ton)
F.o.b. New York, Baled

No. 1 Hard White Envelope Cuts, one cut .....$100.00@$120.00	
No. 1 Hard White Envelope Cuts ..	90.00 " 100.00
No. 1 Hard White Shavings, unruled..	100.00 " 110.00
No. 1 Hard White Shavings, ruled ...	80.00 " 90.00
Soft White Shavings, one cut	95.00 " 105.00
No. 1 Soft White Shavings	85.00 " 95.00
Soft White Shavings, Misc.	65.00 " 75.00
No. 1 Fly Leaf Shavings	55.00 " 60.00
No. 2 Fly Leaf Shavings	50.00 " 55.00
No. 1 Groundwood Fly Leaf Shavings	30.00 " 33.00
No. 2 Mixed Groundwood Fly Leaf Shavings	(nominal)
Mixed Colored Shavings	(nominal)
Mixed Groundwood Colored Shavings...	(nominal)
Overissue Magazines..	(nominal)
No. 1 Heavy Books & Magazines	40.00 " 45.00
Mixed Books	22.00 " 25.00
No. 1 White Ledger..	70.00 " 80.00
No. 2 Mixed Ledger, colored	60.00 " 70.00
New Manila Envelope Cuttings, one cut..	100.00 " 110.00
New Manila Envelope Cuttings	65.00 " 75.00
Extra Manilas	40.00 " 45.00
Mixed Kraft, Env. & Bag Cuttings	75.00 " 85.00
Kraft Envelope Cuttings	100.00 " 105.00
Triple Sorted, No. 1 Brown Soft Kraft.	60.00 " 70.00
New 100% Kraft Corrugated Cuttings ..	70.00 " 75.00
No. 1 Assorted Old Kraft	40.00 " 50.00
New Jute Corrugated Cuttings	27.00 " —
Old 100% Kraft Corrugated Containers.	(nominal)
No. 1 News.....	26.00 " 27.00
No. 1 Mixed Paper..	19.00 " 21.00
Box Board Cuttings..	23.00 " —
White Blank News...	75.00 " 80.00
Overissue News	(nominal)
Old Corrugated	28.00 " 30.00
Mill Wrappers	22.00 " 25.00

Twines

All Prices Nominal
(F. o. b. Mill)
(Soft Fiber)

Coarse Polished—India	.26	@	.29
Fine Polished—Fine India	.31	"	.35
Unpolished—Paper Makers	.20	"	.26
Tube Rope	.22	"	.27½
Wrapping	.26	"	.33½
Cotton	.70	"	—
(Hard Fiber)			
Mex. Sisal	.21	"	.24
Manila	.33	"	—
(Hemp)			
Polished Hemp	.63	"	—

PHILADELPHIA

Domestic Rags (New)

(F.O.B. Eastern Shipping Point)

Shirt Cuttings—	
New White No. 1..	.10½@ .11
New White No. 2..	nominal
Light Silesias	.07½ " .08
Black Silesias, soft	.06½ " .07
New Unbleached ..	.10½ " .11¼
Washable Prints ..	.06¼ " .07
Washable No. 1....	.05 " .05½
Blue Overall	.07½ " .08
Cottons—According to grades—	
Washable Shredding	.03½ " .04
Fancy Percales	.06¾ " .07¼
New Black Soft....	nominal
Khaki Cuttings—	
Unbleachable Cotton Cuttings	.05½ " .06
Bleachable Cotton Cuttings	.06½ " .07
Men's Corduroy ..	.05½ " .06
Ladies' Corduroy ..	.05 " .05½
Cottonades	.05½ " .06

Domestic Rags (Old)

(F.O.B. Eastern Shipping Point)

White No. 1—Repacked	4.50 @ 5.00
Mixed White	4.00 " 4.25
White No. 2—Repacked	3.50 " 3.75
Thirds and Blues—	
Miscellaneous	2.25 " 2.50
Repacked	2.75 " 3.00
Roofing Stock—	
Foreign No. 1.....	nominal
Domestic No. 1....	2.00 " 2.05
Domestic No. 2....	1.90 " 1.95
Roofing Bagging ..	1.90 " 1.95
Old Manila Rope....	5.75 " 6.00

Bagging

(F.O.B. Eastern Shipping Point)

Gunny No. 1—	
Foreign	nominal
Domestic	4.25 @ 4.50
No. 1 Clean Bright—Sisal Strings	.04 " .04½
No. 2 Clean Bright—Sisal Strings	.03 " .03½
Sisal Jute	.02¾ " .03
Scrap—	
No. 1	3.25 " 3.50
No. 2	1.75 " 1.85

Mystic Maze

(*Isotherm Adsorption Apparatus*)

Seen through this mystic maze of tubes and wiring is a Sinclair Research technician. What his apparatus means to users of industrial lubricants is no mystery, however.

At Sinclair Laboratories, the Isotherm Adsorption Apparatus is used constantly to determine the effectiveness of adsorbents used in lubricating oil refining procedures. Because Sinclair lubricants are made with infinite care to suit the specific requirements of your equipment, it is highly important to know exactly how adsorbents, catalysts, and other treating materials perform in a refining process.

This intricate apparatus is an assurance that Sinclair lubricant manufacture guarantees the very highest quality product. It is one more evidence of the painstaking Sinclair research and refinery control that result in outstanding lubricant performance.

Sinclair Power Plant Oils

For Turbines:

SINTURLITE OILS

Oxidation stability, rust prevention, long life

For Compressors:

RUBILENE OILS

In grades to suit all operating conditions

From selected crude processed to quality finish

SINCLAIR REFINING COMPANY • 630 FIFTH AVENUE, NEW YORK 20, N. Y.

SINCLAIR

Lubricants for Industry

FINEST CRUDES + EXPERT RESEARCH and MANUFACTURING CONTROL = OUTSTANDING PERFORMANCE

Wool Tares, heavy	4.00	"	4.25
New Burlap Cuttings	6.00	"	6.50

Old Papers

(F. o. b. Phila.)
Mill Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	$100.00	@	$115.00
No. 1 Hard White Shavings, unruled	100.00	"	—
Soft White Shavings, one cut	90.00	"	95.00
White Blank News	60.00	"	65.00
Soft White Shavings	80.00	"	—
No. 1 White Ledger	75.00	"	80.00
Ledger, colored	60.00	"	65.00
No. 1 Heavy Books & Magazines	40.00	"	45.00
Overissue Magazines	nominal		
New Manila Envelope Cuttings	80.00	"	—
No. 1 Assorted Old Kraft	60.00	"	65.00
No. 1 Mixed Paper	20.00	"	—
Box Board Cuttings	20.00	"	—
Kraft Corrugated Cuttings	nominal		
Old Corrugated	30.00	"	35.00
Overissue News	40.00	"	—
No. 1 News	—	"	30.00

BOSTON

Old Papers

(F. o. b. Boston)
Mill Prices, Baled

No. 1 Hard White Shavings, unruled	7.00	@	8.00
No. 1 Hard White Shavings, ruled	7.00	"	8.00
Soft White Shavings, Misc.	6.25	"	6.50
No. 1 Fly Leaf Shavings	1.65	"	1.80
No. 2 Fly Leaf Shavings	2.00	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	1.25	"	1.50
Mixed Colored Shavings	2.50	"	2.75
New Manila Envelope Cuts, one cut	5.00	"	5.50
Hard White Envelope Cuts, one cut	3.37½	"	—
Triple Sorted No. 1 Brown Soft Kraft	3.50	"	3.75
Mixed Kraft Env. & Bag Cuttings	3.75	"	4.00
Kraft Envelope Cuttings	3.75	"	4.00
No. 1 Heavy Books & Magazines	2.50	"	2.60
New Manila Envelope Cuts, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
White and Colored Tabulating Cards	4.25	"	4.50
Groundwood Tabulating Cards	1.35	"	—
White Blank News	1.65	"	—
No. 1 Assorted Old Kraft	3.50	"	—
No. 1 Mixed Paper	—	"	.95
Overissue News	1.50	"	1.75
Box Board Cuttings	.72½	"	—
New Corrugated Cuttings, Kraft	2.25	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.50	"	—
Jute Corrugated Cuttings	1.07½	"	—
Paper Strings	2.25	"	2.50

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	—	@	4.75
Domestic	—	"	4.75
Sisal Rope No. 1	6.00	"	—
Sisal Rope No. 2	5.50	"	—
Mixed Rope	5.25	"	—
Mixed Strings	2.00	"	2.50
Transmission Rope—			
Foreign	(nominal)		
Domestic	3.00	"	3.50
Manila Rope—			
Foreign	(nominal)		
Domestic	6.25	"	—
Soft Jute Rope	5.00	"	5.25
Jute Carpet Threads	6.00	"	—
Bleachery Burlap	8.50	"	9.00
Scrap Burlap—			
Foreign	—	"	4.75
Domestic	—	"	4.87½
South America	5.25	"	—
Wool Tares—			
Foreign	4.50	"	—
Domestic	4.50	"	—
Aust. Wool Pouches	5.00	"	5.25
New Zealand Wool Pouches	5.25	"	5.50
New Burlap Cuttings	6.00	"	6.50
Heavy Baling Bagging	5.25	"	5.75
Paper Mill Bagging	3.50	"	3.75
No. 1 Roofing Bagging	1.75	"	—

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.07	@	.07½
Fancy Percales	.07½	"	.08
New White No. 1	.10	"	.11
New Light Flannelettes	.08	"	.08½
Canton Flannels, Bleached	.10	"	.11
Underwear Cutters, Bleached	.10	"	.11
Underwear Cutters, Unbleached	.11	"	.12
Silesias No. 1	.07	"	.08
New Black Silesias	.05	"	—
Red Cotton Cuttings	.05	"	—
Soft Unbleached	.11	"	.12
Blue Cheviots	.07½	"	.08
Fancy	.06	"	—
Washable	.05	"	—
Khaki Cuttings	.06	"	.07
O. D. Khaki	.07	"	—
Corduroy	.03½	"	—
New Canvas	.06¼	"	.06½
B. V. D. Cuttings	.10	"	.11

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—			
Repacked	3.80	@	—
Miscellaneous	3.20	"	—
White No. 2—			
Miscellaneous	2.65	"	—
Twos and Blues, Repacked	2.20	"	—
Old Blue Overalls	2.25	"	2.50
Thirds and Blues,			
Repacked	2.20	"	—
Miscellaneous	1.80	"	—
Black Stockings	3.50	"	4.00
Roofing Stock—			
No. 1	2.00	"	—
No. 2	1.90	"	2.00
No. 3	1.35	"	—
No. 4	1.35	"	—
No. 5, Quality A	1.35	"	—
Quality B	1.20	"	—
Quality C	.95	"	—
Old Manila Rope	6.00	"	—

Foreign Rags

(F. o. b. Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
Dutch Blues	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)
Mill Prices, Baled

Shavings—			
No. 1 Hard White Envelope Cuts, one cut	$110.00	@	$120.00
No. 1 Hard White Shavings, unruled	105.00	"	115.00
No. 1 Soft White Shavings	80.00	"	95.00
No. 1 White Ledger	55.00	"	65.00
No. 1 Heavy Books & Magazines	40.00	"	43.00
White Blank News	43.00	"	49.00
Mixed Kraft Env. & Bag Cuttings	75.00	"	85.00
No. 1 Assorted Old Kraft	45.00	"	55.00
Overissue News	28.00	"	—
No. 1 News	25.00	"	—
No. 1 Mixed Paper	20.00	"	—
Old Corrugated	36.00	"	—
Mill Wrappers	22.00	"	—

Grip-Lok Conveyor Is Strong and Safe

CHICAGO — An all-steel conveyor belt developed on a unique new principle has been introduced by the Steel Parts Manufacturing Corporation, division of the Blackstone Manufacturing Company.

It is claimed that the Grip-Lok conveyor belt, built on an entirely new and fundamentally different principle, is destined to establish a new trend in the conveying system field. The belt itself is made up of a series of steel plates linked together at the ends, in such a way that should a belt plate become damaged, it is only a few seconds work to slip out the damaged plate and insert a new one. The belt is driven by a simple drive-sprocket that meshes with the hinges of the belt, providing a positive non-slip movement.

The manufacturer emphasizes the versatility of the new Grip-Lok conveyor, asserting that it proves both efficient and economical in handling anything from cream-puffs to drop forgings, each conveyor being designed for its intended load. There is no sag at any point along the belt length, and no open spaces between links, so that a perfectly flat working surface is presented at every point. This feature makes the belt especially adaptable to assembly-line and packaging applications. The operation of the Grip-Lok conveyor is virtually noiseless. The links mesh perfectly with the drive sprocket, and the belt is held taut throughout its length to eliminate the clashing of steel on steel.

The only exposed moving part is the belt itself. The drive sprocket and motor are enclosed, and the edges of the belt are provided with a guard rail. This is especially important on assembly line applications where worker-safety is an important factor.

The new conveyor has been tested in numerous industrial applications, and good results were reported in every case. In several plants complete systems were ordered after seeing its performance in the tests. The industries that tested the conveyor were chosen for their diversity of application.

SULPHUR

Large stocks carried at all times, permitting prompt shipments

Uniformly high purity of 99½% or better

Free of arsenic, selenium and tellurium

TEXAS GULF SULPHUR CO.
INC.

75 E. 45th Street New York 17, N.Y.

Mine: Newgulf, Texas

MARKETS

BLANC FIXE—Demand steady, deliveries slow, supplies fair to good. Pulp is currently quoted at 55 per ton, in barrels, car lots, at works; the powder is quoted at $67.50 per ton car lots.

BLEACHING SUPPLIES—Supplies adequate to meet current demands. Shipments sometimes delayed. Quotations are unchanged. Prices on bleaching powder range from $2.75 to $3.75 per 100 pounds.

CASEIN—Current prices on processed acid precipitated casein are reported around 32 to 36 cents per pound for domestic grades and 34 to 38c for Argentine grades f. o. b. shipping point.

CAUSTIC SODA—Demand continues to exceed output with little relief seen for domestic or export markets. Solid caustic soda is reported at $2.50 per 100 pounds; flaked and ground offered at $2.90 to $3 per 100 pounds, car lots, at works.

CHINA CLAY—Supply tight as demand continues heavy. Domestic filler clay, is currently $8.50 to $9 per ton, car lots. Coating clay is $12 car lot and $16 less car lot. Imported clay is $49 to $52 per ton, car lot, export warehouse, $69 to $72 less car lot for powdered.

CHLORINE — Buffalo output off as demand reaches new levels. Lack of tank cars continues to hamper deliveries. Quotations unchanged. Chlorine is currently quoted at $2 to $3.50 per 100 pounds.

ROSIN—Gum rosin in drums, per 100 pounds, net, in yard New York, car lots, B, D, $10.80; E, F, G, H, I, K, M, $11.80; WG, $12.05; WW, $12.05. Wood Rosin, per 100 pounds, l. c. l. f. o. b. N. Y., B, $7.45; FF, $8.95; G, H, I, $10.25; WW, and X $10.45.

SALT CAKE—Supplies show little improvement as demand continues to increase. Prices remain unchanged. Domestic salt cake is quoted at $20.00 to $26 per ton in bulk. Chrome salt cake is quoted at $16 per ton.

SODA ASH—Demand active as supplies continue short, previous orders filled. Contract orders prevail at the same high levels. Current prices, car lots, per 100 pounds, are as follows: in bulk, $1.08; in paper bags, $1.20; and in barrels, $1.60.

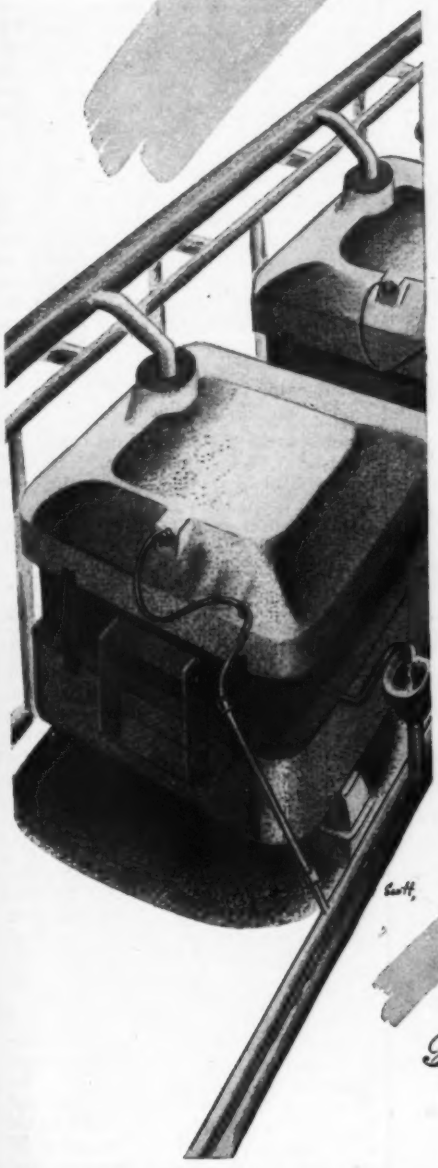
STARCH—Domestic demand absorb capacity production leaving little for export. Starch prices continue strong with the pearl grade quoted at $4.67 per 100 pounds; powdered starch at $4.78 per 100 pounds, car lots, Chicago.

SULPHATE OF ALUMINA — Fair supplies cover active demands. Quotations continue unchanged. The commercial grades are quoted at from $1.15 to $1.30 per 100 pounds, in bags, car lots, f. o. b. works. Iron free is quoted at $1.95 to $2.25 per 100 pounds, in bags at works.

SULPHUR—Plentiful supplies to meet active domestic and export demands. Annual contracts are quoted at $16 per long ton, f. o. b. mines; the price f. o. b. at Gulf Ports is $17.50 per long ton.

TALC—Domestic and French grades are moving in fair volume with prices steady. Domestic grades are currently quoted at from $16 to $30 per ton at mines; Canadian at $35 to $45 per ton. All prices in car lots.

How Hooker cell research helped bring bleaching costs down



THE WRIGHT BROTHERS had just proved that a heavier than air machine could sustain itself in flight, when a group of men with foresight along different lines, organized to explore the possibilities of a new patent. The object of this patent, the Townsend cell, was a new type of electrolytic, diaphragm cell. In exhaustive tests it substantiated the claims made for it in producing chlorine by passing direct current through a brine solution.

In 1906, just three years later, the Hooker Electrochemical Company was in operation at Niagara Falls close to an unfailing source of hydro-electric power, and ready to supply its chief product, bleaching powder, to the pulp and paper industry.

Hooker chemical engineers have kept up continuous research and experimentation to improve Hooker cell efficiency and bring costs down. In 1913 the Hooker "F" cell gave way to the "E" cell. Later improvements are found in the present Hooker type "S" cell of radically new design. This cell is highly efficient as to power and economical as to cost of installation, maintenance, and operation—all of which means uniform quality chlorine and caustic to you at a reasonable price. Because of these improvements in cell design and other manufacturing economies, the price of chlorine has been brought down from $120.00 a ton in 1921 to approximately $40.00 a ton today.

Coincident with these developments, Hooker Technicians were working with pulp and paper making chemists; suggesting new bleaching techniques, conducting experiments and tests to learn the why and the how of pulp and paper processes. Their findings are available in Bulletin form reprinted by the Hooker Electrochemical Company. They cover subjects of interest to everyone in the pulp and paper field. Those of you who have recently become associated with this industry will find them of especial profit. Send for a list of the currently available Hooker Bulletins.

HOOKER ELECTROCHEMICAL COMPANY

6 UNION STREET, NIAGARA FALLS, N. Y.
New York, N. Y. Wilmington, Calif. Tacoma, Wash.

From the salt of the earth

HOOKER CHEMICALS

Caustic Soda Muriatic Acid Sodium Sulfide Paradichlorbenzene Chlorine Sodium Sulfhydrate

Hinde & Dauch Doubles First Quarter Net

SANDUSKY, O.—Net profit of the Hinde & Dauch Paper Company, in the March quarter, totaled $906,645, more than twice the $426,109 earned in the same period last year. This year's profit is after allowing $820,000 for federal income taxes and $97,531 for depreciation. The company paid $476,379 in dividends in January and March.

A year ago, the federal income taxes for the same period amounted to $263,000, and depreciation allowance was $91,783. Dividends paid in January and March last year totaled $438,627.

The factory started business 65 years ago with a threshing machine and a straw baler as its only equipment. The company was begun by James J. Hinde and Jacob J. Dauch as a partnership here. Its chief objective was the production of straw for making paper.

Electric Machinery Quotes Prices on Firm Basis

MINNEAPOLIS — W. H. Feldmann, president of Electric Machinery Manufacturing Company, manufacturers of large electric motors, generators and control equipment, last week declared that all quotations on the company's products are now on a firm basis.

Let's get acquainted

For up-to-the-minute paper distribution call WOrth 2-0050. With a background of 92 years as distributors for leading paper mills, W.G.P. can do a job for you on paper, paper board and specialties.

W.G.P.

Printing, Converting & Industrial Papers
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DOMESTIC AND EXPORT

MEMBER PAPER ASSOCIATION OF NEW YORK CITY

OBITUARY

Ralph Bateman

KENORA, Ont.—Ralph Bateman, vice-president of the Ontario - Minnesota Pulp and Paper Company Limited, died late Saturday, May 3, at Kenora General Hospital. Mr. Bateman was in ill health since last November.

Surviving are his wife, the former Miss Nellie McCeary, whom he married June 10, 1908, and one brother, H. S. Bateman.

Born at Goole, Yorkshire, England, May 21, 1880, Mr. Bateman emigrated to the Dominion in 1908 and obtaining his experience in eastern Canada sawmills and lumber camps. In 1910, he joined the Keewatin Lumber Company at Kenora leaving there to enlist for World War I, serving with the 94th and 52nd Canadian battalions as well as the Forestry Corps. After four years of service on the Western Front he was honorably discharged with the rank of major.

Returned to Kenora in 1919, Mr. Bateman was placed in charge of one of the company's sawmills, then later became manager of the Keewatin Box Factory at St. Boniface, Manitoba. In 1936, he was named resident manager and was later promoted to the vice-presidency of the Ontario - Minnesota Pulp and Paper Company, Limited.

William M. Grohmann

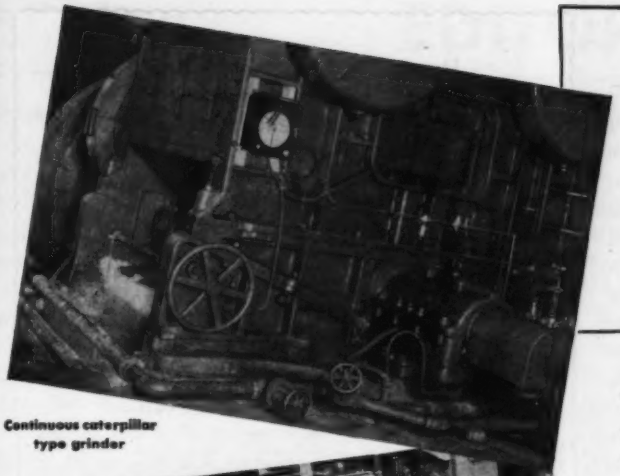
HOLYOKE, Mass.—William M. Grohmann of the Franklin Research Corporation, Philadelphia, Pa., 71, died at the Holyoke Hospital on May 4th where he had been ill for three weeks. Mr. Grohmann lived in Demarest, N. J. Funeral services were held at Englewood, N. J., on May 7th.

Mr. Grohmann developed a wax emulsion that was used by the Navy during the war for its battle area nautical charts. He was born in Dusseldorf, Germany, on February 8, 1876, and attended Cologne and Charlottenberg Universities. Since then he has worked for a number of chemical companies and as a consultant. He was a member of the Technical Association of the Pulp and Paper Industry.

Alfred P. Beauret

NEW YORK — Alfred P. Beauret, president of the Carborid Company, 30 Ferry Street, was killed while piloting his own plane on Sunday, May 4th, at Harrison, N. Y. The plane developed motor trouble and crashed on the Century Country Club grounds.

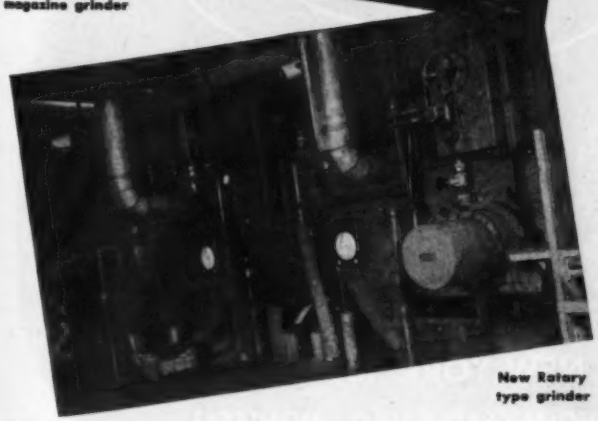
Mr. Beauret was well known to a number of the paper trade associations and through his company performed many of the printing services for the Technical Association of the Pulp and Paper Industry. He is survived by his wife Margaret who is a member of the staff of the News Print Service Bureau in New York.



Continuous caterpillar type grinder

Semi-magazine grinder

Hydraulic type magazine grinder



New Rotary type grinder

Which type of grinder needs Taylor Automatic Temperature Control?

The answer is, *any* type!

Wood pulp grinders, although in use before the Civil War, were not greatly changed in design or operating practice until about 35 years ago. Since then, the steadily increasing demand for paper of all kinds has resulted in many improvements in grinder design and operating practice—one of the most important of which is the *temperature* at which groundwood pulp is produced.

Up to about 17 years ago, grinding temperatures rarely exceeded 145°F., and in many plants were 15° to 30° below that. It is significant that this increase in grinding temperatures started at about the time of *the first practical and successful application* of automatic grinder temperature control. This was developed by Taylor Instrument Companies.

Taylor Automatic Grinder Temperature Control keeps temperatures within 2° to 4° of the temperature best suited for each furnish. It will give you:

1. *A material increase in production.*
2. *A definite decrease in power consumption per ton.*
3. *A more uniform stock.*
4. *A lower stone cost due to longer periods of operation between burring.*

Whatever type of grinder you're using—or thinking of buying—Taylor Automatic Grinder Temperature Control will assure maximum efficiency. Ask your Taylor Field Engineer or write for Bulletin 98108. Taylor Instrument Companies, Rochester, N. Y., and Toronto, Canada. *Instruments for indicating, recording and controlling temperature, pressure, humidity, flow and liquid level.*

Taylor Instruments

MEAN

ACCURACY FIRST

IN HOME AND INDUSTRY

DIGESTED

A significant, astonishing and typical phenomenon of modern times is the general confidence placed in the readings of any well-constructed instrument. The automobile driver swears by his speedometer; the housewife looks at the therometer to see whether she ought to feel too warm or too cold; the handsomely ornamented dials in the lobby of the skyscraper convincinly prove that the wind is blowing 60 miles per hour from the northwest on the roof. This great faith in the readings of instruments should continually remind us of the responsibility resting upon us to justify that faith, to make more accurate instruments, which hold their calibration under severe conditions of service, and which are most nearly foolproof in operation.

This function of measurement touches the daily life of every citizen. His clothes, his furniture, his house, and practically everything he buys are made to measure and are acceptable because of suitable sizes and measured quality. Thousands of measurements contribute to the utility of the street car, bus, or automobile in which he rides; the telephone, the radio, and of the television set. Modern life depends at every hand on goods, mechanisms, and services, measured for effectiveness. —HUGH L. DRYDEN, *Associate Director, National Bureau of Standards, from an address before the Instrument Society of America.*

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1947		Corresponding Weeks—1946	
March 29	107.8	March 30	104.9
April 5	106.1	April 6	104.1
April 12	100.7	April 13	103.6
April 19	105.9	April 20	102.5
April 26 (Revised)	105.3	April 27	100.6
May 3	*108.2*	May 4	107.3

COMPARATIVE MONTHLY SUMMARIES

1946				Year Avg.		1947	
Jan.	94.7	May	100.7		101.1		
Feb.	98.4	June	104.6	Oct.	106.4	Jan.	102.1
Mar.	104.4	July	94.0	Nov.	105.5	Feb.	105.9
Apr.	102.7	Aug.	104.7	Dec.	97.0	Mar.	106.1
		Sept.	101.3			Apr.	*105.1*

COMPARATIVE YEARLY SUMMARIES

	1940	1941	1942	1943	1944	1945	1946	1947
Year to Date	85.5	91.3	102.5	88.7	88.3	88.5	100.1	*105.1*
Year Average	85.6	97.4	90.4	87.8	88.1	89.4	101.1	

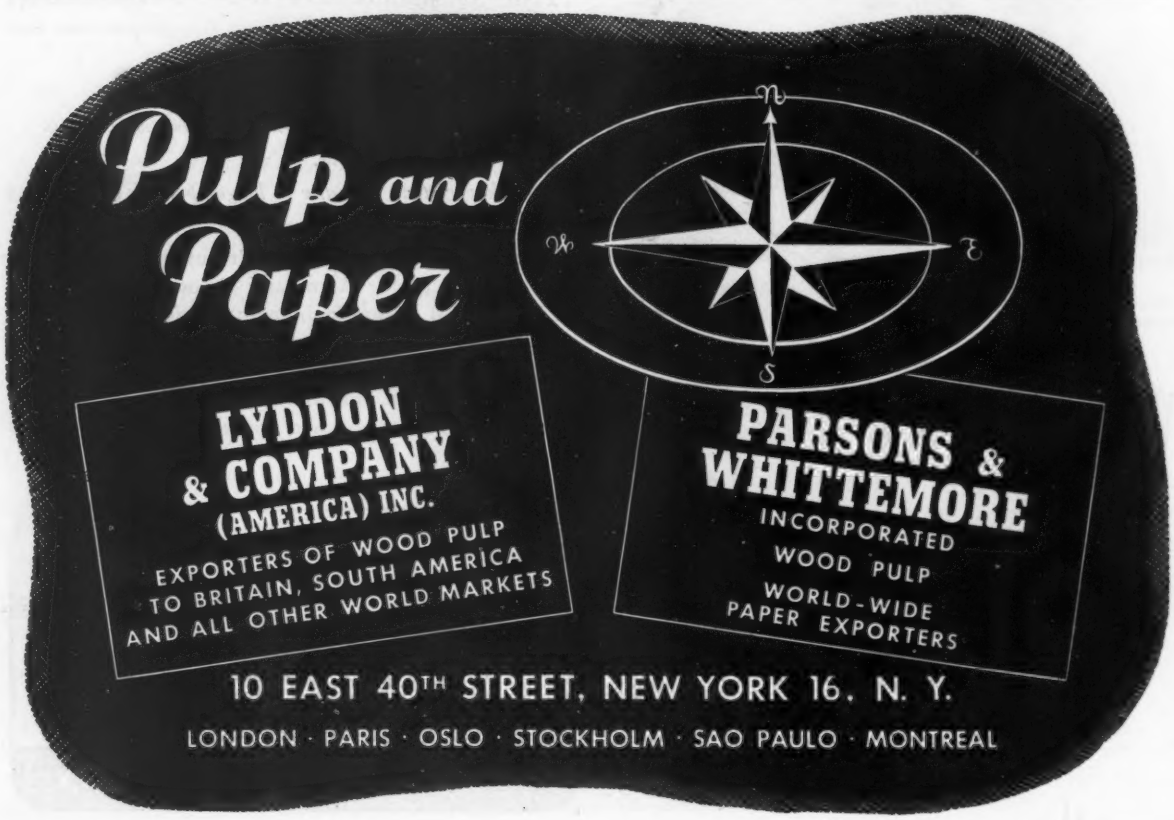
PAPERBOARD OPERATING RATIOS†

Current Weeks—1947		Corresponding Weeks—1946	
March 29	102	March 30	100
April 5	102	April 6	99
April 12	96	April 13	101
April 19	102	April 20	101
April 26	100	April 27	95
May 3	*102*	May 4	101

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1946	90	91	100	99	94	97	89	99	96	100	99	92	96
1947	99	103	101	*100*									

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.


Pulp and Paper
LYDDON & COMPANY (AMERICA) INC.
EXPORTERS OF WOOD PULP TO BRITAIN, SOUTH AMERICA AND ALL OTHER WORLD MARKETS
PARSONS & WHITTEMORE
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WOOD PULP
WORLD-WIDE PAPER EXPORTERS
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EDITORIAL

Pressure Breeds Progress

A gentle old Lutheran clergyman who was visiting at the home of friends in another city solved a problem in church policy for a neighbor of that friend. Though a considerable distance separates that problem from current affairs of the paper industry there is a sufficient parallel to render the clergyman's remark pertinent. The neighbor, it appears, was more than moderately annoyed by actions of some of his co-worshipers; after detailing them at great length he asked the clergyman for advice as to his own attitude. "I should consider," replied the reverend, "that such actions and such policies were put before me to test me and give me practise in sticking to what I believed to be right."

Only a little translation is required to perceive that present-day problems of scarcity, of high demand, of excessive machine speeds, of pulpwood transportation, of strongly voiced minority demands for Congressional action have had the cumulative effect of testing the paper industry's ability to produce, or to assuage those who cannot get all that they want. Yet no one who has watched the kaleidoscopic changing scene of one problem after another, and has observed the solutions that have been reached to solve some of them can fail to have the stoutest faith in the future of the industry. New appreciation and fresh prestige have come with understanding. New standards too, appear to be working toward permanent acceptance.

Out of all the maze-like paths of those who have presented new demands on the industry for paper which they need are to be discerned signs that point to products even better fitted to their uses. Wet strength papers, moisture-resistent papers, multi-wall containers all tend to broaden the ability of paper to serve industry and commerce of the future. Present heavy demand for book papers promises to continue high while matching this demand is to be counted progress that has been made in improving the paper industry's ability to turn out more of such paper at higher speeds.

These results of high-pressure demand not only have served as a test of the industry's ability to meet pressure; they promise lasting benefits for future users of paper.

Even though, on behalf of the Printing Industry of America, James F. Newcomb, its president, found his group beset with problems that limited their activity, he was able to tell a committee of the House of Representatives recently that the paper industry has done a splendid job.

Commercial printers have been suffering not only from the over-all shortage of paper, Mr. Newcomb pointed out, but also from other complicating factors in the paper supply situation. He introduced John J. Maher of the Maher Printing Company of Chicago, another witness for the commercial printers, who declared that book papers are in shortest supply, a fact which, he declared, indicates "the distribution system of the paper industry is seriously dislocated." The distortion of grade relationships which results from shortages of certain grades of paper forces commercial printers to produce printing of a less economical and functional type than they desire to produce. And this in turn leads to a false impression that printers have raised their prices out of line with the price level of the general economy, he explained.

A very spotty situation exists as regards quality of paper now being delivered to commercial printers, Mr. Maher reported. Although no evidence was uncovered by the survey of a so-called black market in paper, "a few centers reported black markets in specialty items and also that small publishers have been forced to pay exorbitant prices on paper they purchase and supply to printers."

Man to Man

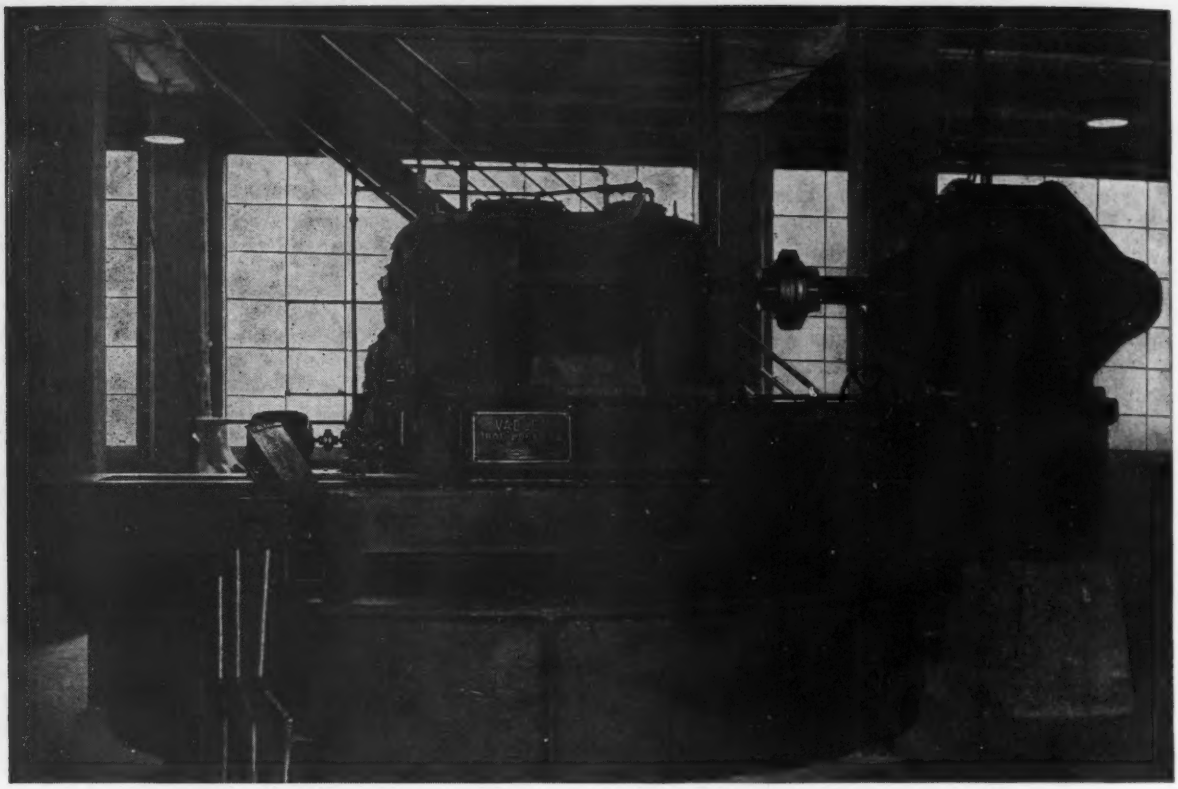
Oratory always benefits when it is phrased in simple statements of fact, omitting some of the more highly florid qualities that it may take on from a liberal sprinkling of high-priced adjectives. And when oratory benefits there is an excellent chance that it will serve better the cause in which it is used, and the interests of those who listen to it. Witness the simple strength of a statement by George Cannie, president of the United Paper Workers of America, Local 299, at a meeting of his local at which officials and supervisory staff of the Continental Paper Company were invited guests.

"We are not too small at Continental to set the pattern for the nation to follow," declared Cannie. "We gave considerable thought and discussion to this meeting tonight before we invited management and our final decision was based on our confidence in the belief that only by knowing each other better can we settle our differences on a friendly basis."

To this the guest speaker, the Reverend Philip E. Dobson, S.J., Director of St. Peter's Institute of Industrial Relations, Jersey City, warned that the future of America lies in the hands of labor and management. "Both sides stand before the bar of public opinion in the United States and frankly neither has clean hands," declared Father Dobson. "But you at Continental have set the pattern for the rest of the nation to follow. You are demonstrating by this fine meeting tonight that labor and management can sit down together, can meet on a human basis and act intelligently, far away from the jungle philosophy of dog-eat-dog and the slugging which has marked the past relationships of labor and management in this country."

W. L. Cook

EDITOR



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SECTION OF THE

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Nomographic Treatment of the Results From the Cupriethylenediamine Method of Determining the Viscosity of Cellulose*

By Geoffrey Beall[1]

Abstract

In order to facilitate use of the relations, developed in the work of Levy, Muffat, and Harrison, necessary to make rapid determinations of the viscosity of cellulose by the cupriethylenediamine method, a nomogram has been prepared. The time necessary for passage through an Ostwald-Cannon-Fenscke viscometer, a constant peculiar to the viscometer used, and the concentration (grams per 100 ml. of pulp in a suspension) give at once the viscosity value that would have been obtained had the concentration been unity.

As a rapid and convenient means for determining the viscosity of a solution of cellulose, Levy, Muffat, and Harrison *(1)* suggested that a suspension of pulp be used, the concentration of which is not highly controlled, although accurately determined, and submitted a relationship permitting correction to a basis of 1% suspension. This procedure is well suited to mill conditions and seems to have come into wide use. The authors suggested that tables appropriate to the problem be prepared but the present work suggests and presents a nomogram. The nomogram is more easily used than a set of tables.

The experimental procedure is to pass a mixture of pulp (approximately 1% concentration) and an equal volume of cupriethylenediamine through an Ostwald-Cannon-Fenscke viscometer, the time required for passage being recorded. Following the above authors, it is noted that

$$1/C + 0.3 = S\,[(1/\log_{10} V_R) - 0.05], \qquad (1)$$

where C is the concentration (grams/100 ml. of pulp in the suspension), S is a constant, V_R is the relative viscosity (V/X), V is the viscosity of the solution, and X is the known viscosity (1.7) of the solvent. It is required to find V', the value of V when $C = 1$. It is necessary to note further the relationship,

$$V = 1.052Kt, \qquad (2)$$

where 1.052 is the generally accepted density of cellulose, K is a constant peculiar to the viscometer used, and t is the time observed in a test.

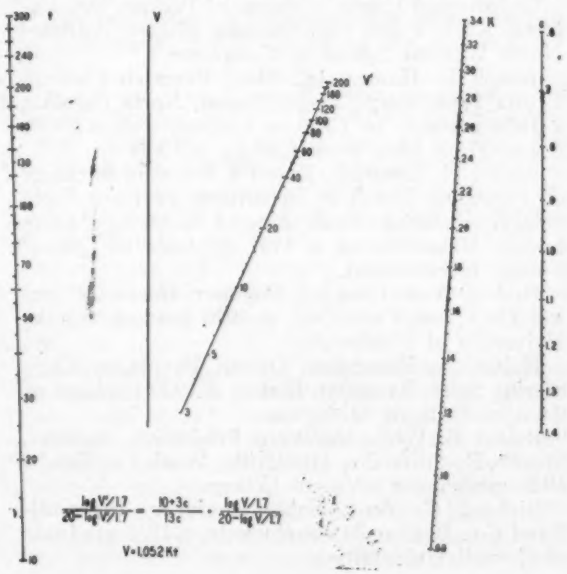
In order to construct a nomogram on the foregoing basis it is first necessary to decide on the possible limits of the variables in mill operation. L. L. Klinger of the Consolidated Water Power and Paper Company drew attention to the present problem and further assisted by using the resultant nomogram in his laboratory operations. The limits are:

$$\begin{aligned} 0.6 &\leq C \leq 1.4 \\ 10 &\leq t \leq 300 \\ 0.0846 &\leq K \leq 0.3307 \end{aligned} \qquad (3)$$

The nomogram found is shown and, by way of illustration, the solution for

$$\begin{aligned} K &= 0.3266 \\ t &= 218 \text{ seconds} \\ C &= 1.10\% \end{aligned}$$

is added. The known values of t and K are marked on the appropriate scales and the line joining them gives an intercept on the V scale (ungraduated).



* Presented by title at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Hotel Commodore, New York, N. Y., Feb. 24 to 27, 1947.

[1] Research Associate, The Institute of Paper Chemistry, Appleton, Wis.

From the intercept on the V scale and the appropriate point on the C scale, the intercept on the V' scale is found to be approximately 58. The result agrees reasonably well with the value of 58.66, calculated from equations (1) and (2).

Confidence in the result may be heightened by a presentation of the algebraic expression of the nomogram, although this expression is in no way involved in its use. Starting with equation (2), the first part of the nomogram may be plotted from the determinant:

$$\begin{vmatrix} \frac{8.758}{1 - 0.1972 \log K} & \frac{22.292 + 23.606 \log K}{1 - 0.1972 \log K} & 1 \\ \frac{-2.934}{1 - 0.06606 \log t} & \frac{-11.067 + 7.908 \log t}{1 - 0.06606 \log t} & 1 \\ 0 & \frac{-2.823 + 5.917 \log V}{1 - 0.04943 V} & 1 \end{vmatrix}$$

Starting with equation (1), the second part of the nomogram may be plotted from the determinant:

$$\begin{vmatrix} 10 & \frac{20.65 - 14.75 C}{1 + 0.3 C} & 1 \\ \frac{-0.912 + 3.958 \log V'}{1 + 0.3419 \log V'} & \frac{-3.459 + 8.254 \log V'}{1 + 0.3419 \log V'} & 1 \\ 0 & \frac{-2.823 + 5.917 \log V}{1 - 0.04943 \log V} & 1 \end{vmatrix}$$

In the determinants, which follow Kraitchik *(2)*, the first column gives values of the abscissa in a Cartesian field, the second gives the ordinate, and the third satisfies a necessary condition; the rows are each peculiar to some variable, as can be seen. The determinants may be proven by expansion.

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2. Kraitchik, M., Alignment Charts. New York, Van Nostrand, 1944.

New TAPPI Members

The Executive Committee of the Technical Association of the Pulp and Paper Industry has elected the following to membership:

Cecil H. Baldwin, Assistant Chemist, Coos Bay Pulp Corp., Anacortes, Washington, a 1946 graduate of the University of Washington.

G. Norwood Fisher, in charge of Package Development, Kraft Foods Co., Chicago, Illinois. Attended North Western School of Commerce.

Joseph E. Hunter, Jr., Chief Research Chemist, Ecusta Paper Corp., Pisgah Forest, North Carolina, a 1934 graduate of Clemson College, with a Ph.D. degree from Iowa State College in 1940.

Arthur H. Landrock, Research Assistant in charge of Packaging Research, Department of Food Technology, Massachusetts Institute of Technology, Cambridge, Massachusetts, a 1941 graduate of Queens College (New York).

Paul G. New, Chemical Engineer, General Chemical Co., New York City, a 1920 graduate of the University of Pittsburgh.

Helmer A. Ronningen, Owner, Ronningen Engineering Sales, Evanston, Illinois, a 1920 graduate of the University of Minnesota.

Robert B. White, Assistant Production Manager, Sonoco Products Co., Huntsville, South Carolina, a 1928 graduate of Clemson College.

Richard G. Zens, Sales Engineer, Ingersoll-Rand Co., Boston, Massachusetts, a 1938 graduate of Cornell University.

George A. Oechsle, Jr., Student, New York State College of Forestry, Syracuse, New York.

Henry G. Shapiro, Patent Counsel, Marathon Corporation, Menasha, Wisconsin, a 1940 graduate of George Washington University.

John L. Vanderberg, Sales Engineer, R. T. Vanderbilt Co., Inc., Kalamazoo, Michigan. He attended Western Michigan College.

Gerard Escarfail, General Manager, Papeterie de Moulin-Vieux, Pontcharra-sur-Breda (Isere, France, a 1928 graduate of Grenoble University.

Donald J. Goodman, Chemist, The Sorg Paper Co., Middletown, Ohio, a 1938 graduate of Purdue University.

Kaare O. Hohle, President, Essex Paper Mills, Inc., New York City, a 1929 graduate of the University of Oslo, Norway.

Linwood G. Willins, Research Chemist, Oxford Paper Co., Rumford, Maine, a 1940 graduate of the University of Maine.

Edmund A. Yerger, Sales Manager, The Moore & White Co., Philadelphia, Pennsylvania. Attended Temple University.

Thurston L. Yocum, Senior Research Chemist, Crown-Zellerbach Corp., Camas, Washington, a 1934 graduate of Oregon State College.

Johan A. Bjorksten, President, Bjorksten Research Laboratories, Chicago, Illinois, a 1931 graduate of the University of Helsingfors, Finland.

Robert A. Boyer, Director of Scientific Research, The Drackett Company, Cincinnati, Ohio. He attended the Edison Institute of Technology.

Z. Paul Byne, Proprietor, Acme Converting Co., New York City.

George E. Calef, District Engineer, The Dicalite Co., Boston, Massachusetts, a 1928 graduate of the Massachusetts Institute of Technology.

Bernardo G. Capó, Technical Director, The Ancram Paper Mills, Ancram, New York, a 1929 graduate of the University of Puerto Rico, with a Ph.D. degree from Cornell University in 1942.

Peter de Florez, Senior Engineer, Doubleday & Co., Inc., New York City, a 1938 graduate of the Massachusetts Institute of Technology.

Paul M. Goodloe, Technical Service, Brown Company, New York City, a 1936 graduate of Johns Hopkins University with a Ph.D. degree.

Russell V. Knapp, Branch Manager, Bailey Meter Co., Milwaukee, Wisconsin, a 1921 graduate of Kansas State College of A & M Arts.

Robert L. McCray, Research Department, Crossett Lumber Co., Crossett, Arkansas, a 1941 graduate of the New York State College of Forestry.

John McWilliams, III, Engineer, Byron Weston Co., Dalton, Massachusetts.

Gavin H. Mullen, Director of Development and Promotion, Central Paper Co., Inc., Muskegon, Michigan. He attended the University of Detroit.

John M. Patch, Materials Engineer, Eastman Kodak Co., Rochester, New York, a 1925 graduate of Harvard College, with an M. S. degree from the Michigan College of Mines in 1933.

Leland S. Rosener, Consulting Engineer, 233 Sansome St., San Francisco, California, an 1899 graduate of the University of California.

Charles J. Sibler, Chief Engineer, West Virginia Pulp & Paper Co., New York City, a 1920 graduate of Technical University, Zurich.

John L. Waldo, Salesman, National Aniline Division, Allied Chemical and Dye Corp., Philadelphia, Pennsylvania. Attended the University of California.

White Water System for Cylinder Board Mill*

By O. E. S. Hedbring[1]

Abstract

A board mill white water system is described from the standpoint of effecting maximum savings consistent with good mill operation and meeting future requirements for abatement of stream pollution.

Recirculation of white water is common practice in cylinder board mills. However, many mills have gone only part way and will do well to re-examine their white water system because of probable legislation for the abatement of stream pollution. Substantial savings also can be realized in a properly designed system.

The purpose of this paper is to discuss briefly the mechanics of a satisfactory white water system. In so doing it is well to keep in mind that no two mills are alike and what works in one mill does not necessarily work in another.

Consistent with good mill operation, the desired objectives are (1) to reduce heat, fiber and chemical losses to a minimum; (2) to clean up the mill effluents sufficiently, at least to meet future legal requirements; (3) to reduce the quantity of fresh water, if the cost of water *per se* is appreciable and (4) to eliminate sudden and heavy steam demands due to heating process water.

Mechanics of White Water System

The overflow water from the bottom liner, filler, and underliner vats is collected in a white water chest which shall be referred to as the filler white water chest. This chest must have sufficient volume to accumulate the vat overflow water during "no demand" periods in the beater room. If this chest overflows, considerable heat may be lost in the sewer.

In combination board mills it is advantageous, from a defibering and production standpoint, to keep the stock hot in the vats. This requires heating of the white water ahead of the beaters.

If the water is heated directly by steam, the condensate is lost which is costly when feed water treatment is an item. An indirect heater enables the return of the condensate to the boilers. It also lends itself to better control of steam flow and water temperature. These benefits are offset partly by the initial cost of the heater, cleaning of the heater at regular intervals, occasional retubing jobs, and the danger of getting white water into the condensate if the tubes should leak.

To lengthen the service of the heater between cleanings it is desirable to keep the diameter of the tubes relatively large, say 1½ inches or more, and to effect a scrubbing action by pumping the water through the tubes. Pump maintenance can be reduced by using an open impeller, stock type, pump.

The white water from the filler white water chest is pumped through the heater and goes either to the beater room or back to the chest through a relief valve which is partially open, except during periods of maximum water demand in the beater room.

For example, if the pump delivers 1000 g.p.m. and the average demand in the beater room is only 500 g.p.m., the excess water goes back to the chest.

If the beater room uses 1000 g.p.m. for a short period, the relief valve closes completely and no water is recirculated.

Conversely, when the beater room header valves are closed all the water pumped through the heater returns to the filler white water chest.

If a source of low pressure steam is available, it can be used to good advantage in the filler white water heater. Reduced high pressure steam is used to maintain the pressure. A temperature control valve in the low pressure steam line is adjusted for maximum water temperature.

It is necessary to insure the water supply in the filler white water chest so that the system does not run dry. The felt shower water provides the source of this makeup. A separate pump may be required for the purpose. A level control in the chest which starts and stops the pump through an electric relay affords a suitable control.

The water from the filler white water chest is used in the filler, botton and underliner beaters and pulpers.

The importance of having the filler white water chest and equipment proportioned and working properly from a steam and heat saving standpoint cannot be over-emphasized. In mills having low pressure boilers where steam balance is a problem, irregular steam demand in heating process water is often the direct cause of the trouble and the reason why steam is blown to the atmosphere.

The top liner vat overflow water is recirculated in a separate system similar to the one just described.

Since top liner stock is generally prepared in batches, it is necessary to proportion the size of the white water chest so that it does not overflow between batches. The water is recirculated to the chest through a liner white water heater exactly as described above. This water supply is insured by fresh water through a suitable level control.

Some mills find it necessary to maintain a separate hot fresh water system for the top liner beaters (pulpers) in addition to the liner white water system.

The reason for the hot fresh water system is that in changing colors it is desirable to charge the top liner beaters with fresh water until white water from the new color is available. In such cases the steam is turned off the liner white water heater while the last beaters (pulpers) of liner stock of the old color are run over the machine. The top liner vat overflow water is turned into the sewer while the liner water chest is emptied and washed down.

* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 24 to 27, 1947.

[1] Member TAPPI; Assistant to Production Vice-President, United Paperboard Co., Inc., Lockport, N. Y.

The system is again started when the color change has been made on the machine.

If a separate hot fresh water system is maintained, the frequency at which this water is used and the necessity of having a balanced steam load determine whether a storage chest and a recirculation system are required or an instantaneous heater will suffice.

Showers

Cylinder Showers

Experience indicates that no fresh water is required for cylinder showers if each vat has its own shower pump which delivers about 25 pounds gage pressure at the shower. These pumps are supplied by return water from the vat in case of a conventional counterflow vat and from the inside of the cylinder mold in case of a uniflow vat.

Some mills, however, find that an oscillating needle, jet type of fresh water shower will keep the cylinder wires in better condition and, since their water consumption is low, their use may be justified. However, these showers require very clean water to operate satisfactorily and the chemical nature of the water in some cases requires frequent replacements of the nozzles.

Deckle Showers

It is recommended that fresh water be used in the deckle showers in connection with a gooseneck shower nozzle which has a narrow slit orifice. These showers consume approximately 5 g.p.m. each but they do not work well on white water.

Felt Showers

Clarified white water from the saveall can be used to good advantage on the felt showers, provided the solids content does not exceed about 0.6 pounds per thousand gallons. On white lined boards fresh water may be necessary on the outside shower of the top felt. A minimum of 25 pounds gage pressure should be available for the felt showers to operate well on white water and the water should strike the felt tangentially, rather than at right angles.

Extractor and Suction Roll Showers

The oscillating needle jet type shower, subject to the limitations previously mentioned, combines low water consumption with efficient cleaning of extractor wires.

It is also recommended that fresh water be used on the internal showers of suction rolls as clarified white water plugs these showers.

Screens, Stuff Boxes, Consistency Regulators

Any showers, or dilution water, required for screens, stuff boxes, consistency regulators, etc., should be white water unless a very small amount of fresh water is involved.

Some consistency regulators are designed for fresh water dilution but they are not suitable for board mills when temperature losses and fresh water consumption are to be held to a minimum.

Savealls

To clean up the mill effluents to meet future legal requirements will, undoubtedly, necessitate the use of a saveall. Regardless of the type of saveall employed, maximum efficiency of the white water recirculation system restricts its functions: (1) to provide clarified white water where other white water cannot be utilized and (2) to clean up the final mill effluents.

To pass rich white water which can be recirculated ahead of the saveall into the latter necessitates a larger installation than is actually required, increases operating costs and temperature losses.

It is well, in selecting a saveall, to bear in mind that in a board mill which uses waste paper as a raw material the freeness of the fibers suspended in the white water will vary widely. Any saveall whose operation is affected by the freeness of the suspended fibers is likely to give unsatisfactory results.

Some mills are using elaborate sedimentation systems to clarify further the effluents after they have passed through a saveall. Whether used in connection with a saveall or alone, such installations are considered expensive to install and to maintain. It is believed that a properly designed white water recirculation system backed by a suitable saveall will clarify the mill effluents to meet present and future stream pollution requirements without further treatment.

Slime and Other Difficulties

There is no question that closing up the white water system promotes bacterial growth which may be very harmful, unless proper counter-measures are taken. Slime, however, can be controlled although some experimentation may be necessary to determine what treatment is most suitable and where to apply it.

In closing up the water system, foam and sizing troubles are likely to be encountered when making heavily sized boards.

Foam trouble can often be overcome by mechanical manipulation. The stock should never be allowed to spill freely from one level to another. For example, if the line from the screen to the mixing box is not submerged, foam is created but it can be easily overcome by a minor change in the piping.

Chemical treatment or adjustments may be necessary to overcome sizing trouble. It is a matter of finding the proper method.

Savings

Since most mills already have some degree of white water recirculation and the conditions vary in each mill, it is impossible to state here what dollars and cents savings can be effected through further development of any particular white water system. As stated earlier in this paper, legislation will in many cases make changes mandatory. The savings will pay for the capital expenditure in a relatively short time, often in less than a year.

Multimachine Operations

In mills of more than one board machine it is advantageous to separate the white water systems, so that each machine and its white water are independent of any other. However the physical plant lay-out and cost considerations sometimes preclude this arrangement and it is then necessary to sacrifice some of the flexibility available in the one machine white water system by combining the filler systems and using one saveall.

In conclusion, it is not implied that the subject matter has been exhausted or that an ideal system has been presented in the foregoing remarks. On the contrary, it is believed that the industry as a whole would profit by a pooling of experience and knowledge of how to handle white water and mill effluents, since this problem must have increased attention as the pressure for stream improvement further develops.

Progress of Pollution Abatement in the Tennessee Valley*

By W. G. Stromquist[1]

Abstract

The major part of stream pollution in the Tennessee River system originates with municipalities and industries in Virginia, North Carolina, and Tennessee. In 1945, the General Assembly of Tennessee passed a pollution control law and established a Stream Pollution Control Board. In 1946, Virginia passed a pollution law and established a Water Control Board. North Carolina established a Stream Sanitation Committee to make a survey so that legislation may be based upon actual data.

The TVA has cooperated with the Tennessee Stream Pollution Board in field surveys. In the summer of 1946, an extensive survey was made of the South Fork of the Holston River, utilizing a schedule based on time of water travel so as to sample the same prism of water at successive downstream points.

An unusual problem which illustrates cooperation between state agencies, TVA, and industry developed at Harriman, Tennessee, in connection with wastes discharged from the Mead Corporation plant. Progress is being made in the correction of undesirable conditions. Several municipalities have engaged consulting engineers; and several plants, notably the Champion Paper and Fibre Company at Canton, North Carolina, and the Tennessee Copper Company, are contemplating changes in equipment which will result in the reduction of pollution.

Stream pollution in the Tennessee River system originates mainly in the upper part of the valley with municipalities and industries in Virginia, North Carolina, and Tennessee. These three states have taken action to abate present pollution and to prevent, so far as possible, additional pollution. Tennessee passed a stream pollution law in 1945 and established a stream pollution control board which is as active as present limitations of personnel permit. In 1946 Virginia passed a pollution law and established a water control board which now is in the state of being organized. North Carolina established a stream sanitation committee consisting of representatives of state departments, municipalities, and several types of industry. This committee has requested an appropriation for making a survey so that legislation may be based on factual data. The National Council keeps those interested well informed on progress of legislation.

Control Board

The Pollution Control Board of Tennessee includes the commissioners of health, agriculture, and conservation with two representatives from municipalities and two from industries. The chief sanitary engineer of the State Health Department serves as technical secretary to the board. The board has adopted general regulations which require mainly the following: new construction on new plants must submit plans of the waste collecting and disposal systems for review and approval. It will have supervision over maintenance and operation by requiring records and reports of operation and routine submission of samples. It will make investigations, reports, and recommendations, establish standards and criteria, and issue orders for necessary improvements. It will require permits to discharge sewage, industrial waste, or other waste.

After these regulations were adopted, copies with application blanks were mailed to all known muncipalities and industries in Tennessee. It was required that prior to July 1, 1946, applications for permits must be filed with necessary data which will serve as a basis for issuing of tolerance permits. Such tolerance permits will specify needed time for necessary correction to be completed which will be set by the board after investigation of the particular problem of the municipality or industry. In many cases, sufficient data may be included in the application to serve as a basis for issuing a permit rather than just a tolerance permit.

The technical personnel has started concentrating its first work on the Holston River Basin in northeastern Tennessee. This area contains 5.3% of the state area but 8.3% of the population, 7.4% of the domestic pollution, and 18.0% of industrial pollution, or 13.5% of the total pollution in the state. Also, this problem represents a large number of industries and communities concentrated in a relatively small area. and the dry-weather flow of the Holston is relatively low.

The policy of the board is one of cooperation with municipalities and industries and to use the teeth of the law only in extreme cases. Many communities in the state have employed consulting engineers to prepare plans and apparently expect to construct treatment plants as soon as possible.

The TVA has cooperated with the State Pollution Board in surveys with its mobile laboratory. In the summer of 1946, an extensive survey was made of the South Fork of the Holston River. Here sampling was done not at specified points at specified times, but with the cooperation of the Hydraulic Data Division to note stream flow and estimate time of travel between points, the samples were collected at definite time intervals from the point of discharge and as nearly as possible from the same section of water.

The pollution board appointed a technical committee which included representatives of interested state departments, a water plant operator, a representative of industry, and a representative of the TVA Stream Sanitation Staff. This committee developed general criteria for the definition and control of pollution in the waters of Tennessee. Their report was reviewed by representatives of various federal agencies. The report includes minimum criteria of water conditions in terms of solids, temperature, turbidity

* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 24, 1947.

[1] Asst. Chief Public Health Eng., Tennessee Valley Authority, Chattanooga, Tenn.

or color, taste or odor, acidity or akalinity, hardness or mineral compounds, dissolved oxygen, toxic substances, and other pollutants. These criteria will be applied to the waters in the stream below known points of pollution and based on available dry-weather stream flow at a certain point, the stream flow to be adjusted to other points. All these data will be used to determine the degree of treatment necessary for domestic sewage and industrial waste by using the absorbative capacity of the stream as much as possible.

Industry Cooperation

Several instances can be given of cooperation between state agencies, TVA, and industry. A notable one is that of the Mead Paper Corporation at Harriman, Tennessee. This presented a rather unusual problem. When the Watts Bar Dam was built on the Tennessee River, the water backed up to Clinch River and into the Emory River, a tributary which enters the Clinch 4.4 miles above its mouth. Norris Dam, forming a deep storage reservoir, is located about 80 miles above the mouth of the Clinch. The town of Harriman is about 13 miles above the mouth of the Emory with the outfall of the paperboard mill 11.3 and the water works intake 12.8 miles above the mouth of the Emory. Water is discharged from the penstocks of the Norris Dam at an approximately uniform temperature of 52°F. the year around. When the Norris hydro plant is operated in the late summer and fall, and the cold water reaches the Emory River, it flows upstream at the bottom to the upper end of the backwater just above Harriman and carries paper mill waste and city sewage to the intake of the water works. This creates a serious problem from taste, odor, and color in the domestic water supply. The Harriman mill uses the semichemical process, digesting dead chestnut chips.

As temporary measure, the Mead Corporation constructed a lagoon for storing the digester liquor and obtained a tow boat and barge for barging the digester liquor to the main Tennessee River where it is discharged over a large area. A Dorr clarifier was also installed where the white water is settled after treatment with lime. The resulting sludge was found to be very difficult to dehydrate so that at present it is barged downstream together with the digester liquor. The Chemical Engineering Department of the TVA is cooperating with the Mead Corporation in trying to develop methods of dewatering the sludge so that the lime can be reused for coagulation or made into agricultural lime.

A former employee of the Mead Corporation has applied for patents together with the Mead Corporation on a method of recovering the semichemical digester liquor by burning the sulphur and carbon without forming sodium sulphide and recovering the sodium as the carbonate. This proposed process is awaiting final tests with suitable equipment to effect the type of burning required. It is estimated that the heat recovery together with the chemical recovery will pay for the operation in the semichemical process, while when applied to the sodium base acid sulphite process a substantial saving is indicated.

About three years ago, the Champion Paper and Fibre Company at Canton, North Carolina, the largest paper mill in this section, announced a 5-million dollar construction program. Because of increased costs of labor and material, it is now estimated that the completion of work will involve somewhat greater expenditure. While the major purpose is to increase pulp and papermaking capacity, the program also includes waste recovery equipment; and it is estimated that about one-third of the expenditure will have a direct effect of reducing the pollution in the Pigeon River which empties into the French Broad which joins the Holston River to form the Tennessee.

The TVA, in cooperation with the state health departments and the U. S. Public Health Service, made the original stream pollution survey of the tributaries in 1937 to 1939. Since that time the Ecusta Paper Corporation installed a plant in the upper reaches of the French Broad River, so that in the fall of 1944 another survey was made by the trailer laboratory. It was found that the Ecusta Paper Corporation was also making a study of the French Broad River, and an interchange of data was made. In comparing results for a similar period, a remarkable correlation of data obtained by two organizations working independently was found.

In applying Professor Velz' formula for the reoxygenation of streams it was found that the coefficient k which he generally reported about 0.1 was found to be as high as 0.6. Professor Velz' work had been entirely in streams at least 5-feet deep and with low velocities. The French Broad is a comparatively shallow stream, turbulent, and with very high velocity. This rapid recovery may in some instances require a lesser degree of treatment of sewage and waste than would be required under different conditions.

An example of cooperation outside the paper industry is the Tennessee Copper Company in southeastern Tennessee. Recovering SO_2 from roasting copper ore has developed sulphuric acid as their main product. The acid waste is discharged into the Ocoee River above three of the Authority's hydroelectric plants—two having been acquired from the Commonwealth and Southern Corporation in 1939 and the third being constructed as a part of the war emergency program in 1942. It was found that at this last plant, which is farthest upstream, the turbine runners were badly deteriorated after a few months of service. There has been most excellent cooperation between the copper company and the Authority. While marked improvement in the quality of the water in the Ocoee River has been made, to obtain the desired results will require an expensive and long-range program.

Although there has been some improvement, pollution from domestic sewage and industrial waste is still entering the Tennessee River system very much the same as it has been doing in the past. However, there has recently been a greatly increased interest by the public, state agencies, municipalities, industry, and organizations such as sportsmen's clubs. There has also been developed a spirit of cooperation and mutual understanding between industry and regulatory agencies so that those who are interested in a clean Tennessee River are looking forward optimistically to marked improvement in the not too distant future.

Chicago TAPPI To Meet

The Chicago Section of the Technical Association of the Pulp and Paper Industry will meet on May 19, 1947 at 6:30 p.m. at the Chicago Bar Association, 29 S. LaSalle St., Chicago, Ill. The speaker will be A. E. Montgomery of the J. O. Ross Engineering Corporation. His subject will be "Waste in Drying Paper in Mills and Converting Plants."

Influence of Oxidation of Pulp On Wet Strength*

By M. O. Schur[1] and R. M. Levy[2]

Abstract

Based on the hypothesis that the cross-linking of cellulose chains may be common to the various known methods of increasing wet strength, it was predicted that oxidation of pulp should improve the wet strength of the paper made therefrom. A study was accordingly made of the effect of oxidizing a semi-bleached kraft pulp with sodium periodate or with sodium hypochlorite in aqueous solution on the beating characteristics of the pulp and on the properties of handsheets prepared from the beaten pulp. It was found that pulp treated with periodate becomes progressively more difficult to beat the more the pulp is oxidized. Handsheets prepared from the pulp indicate a corresponding loss in dry tensile strength and an increase in porosity. It is particularly noteworthy that these handsheets are all relatively high in wet strength. When the periodate treated pulps are subjected to a secondary oxidation with chlorine, they regain relatively normal beating and sheet-making characteristics, but revert in wet strength. On the other hand, pulp treated with hypochlorite, either at pH 7 or pH 9, develops slowness during beating more rapidly than the untreated pulp. The dry tensile strength of the corresponding handsheets is increased, except where the viscosity has been greatly decreased by the oxidant; and the handsheets become less porous. The wet strength of the handsheets is higher than in the case of the untreated pulp similarly beaten, though not as high as in the case of the periodate treated pulp. The level of wet strength gained, within the limits of the experimental conditions studied, appears to depend upon the degree of oxidation and upon the method of oxidation; fiber length also enters as a factor.

It is now generally recognized that the wet strength of paper, i.e., its tenacity when wet through with water, is within wide limits a controllable property. During the past twenty-five years, a variety of methods have been developed for imparting wet strength to paper which alter but little the more commonly measured characteristics or the appearance of the paper. Several of these methods have attained commercial importance. A detailed review of the literature has been prepared by Collins *(5)*.

Probable Role of Cross-Linkages

Despite the apparent lack of similarity among the different methods of wet strengthening paper, they are all probably characterized by the formation of chemical linkages between contiguous fibers or fibrillae and perhaps also between adjacent cellulose micelles. Heuser *(12)* points out an interesting example of wet strength development which he believes to be due to methylene bridges established between adjacent cellulose chains when the pulp is treated with formaldehyde in the presence of an acid catalyst and subsequently heated. Stamm and Hansen *(17)* are of the opinion that a cross-linking of cellulose chains takes place when lumber is heated. This type of cellulose cross-linking is probably at the root of the improvement in wet strength realized when paper is strongly heated *(16)*. Taft *(19)*, in work with urea-formaldehyde resin, and Landes and Maxwell *(14)*, in a study of the melamine resin process for increasing the wet strength of paper, conclude that some type of cross-linking between cellulose and the resin polymers occurs.

The fact that formaldehyde, as such, or in the form of a partially polymerized product of reaction with urea or with melamine, enhances wet strength leads to the prediction that the introduction of carbonyl groups into the cellulose molecule by suitable oxidation of the pulp, i.e., without excessive decrease in average chain length, should result in a marked increase in the wet strength of paper made from the pulp.

That this prediction is justified is indicated by the data obtained in the interesting oxidation experiments described below.

Oxidation Experiments

A semibleached West Coast hemlock kraft pulp was treated at 25°C. and at 6.0% stock density with sodium periodate or with sodium hypochlorite in aqueous solution for various lengths of time. In every case, the quantity of oxidant initially present was equivalent to 2.5% to 3.0% available chlorine. The pH of the periodate solutions was maintained at 2.5 with phosphoric acid; the hypochlorite treatments were carried out at pH levels of 7 and 9, respectively, with the aid of phosphate buffers.

It has been shown by Jackson and Hudson *(13)* that cellulose oxidized with periodic acid undergoes dialdehyde cleavage at the 2, 3 carbons in the pyranose ring; hypochlorite, on the other hand, gives no indication of this type of cleavage *(9,10,11)*. The relation between the number of carbonyl groups introduced into the cellulose chain and the quantity of hypochlorite consumed depends upon the pH at which the reaction occurs, as shown by Davidson *(7)* and by others *(3,4)*. These marked differences in the manner in which oxidation proceeds determined our selection of the oxidizing conditions employed in the present study.

The oxidized pulps were tested for cupriethylene-diamine viscosity *(18)* and for TAPPI standard copper number. The latter, of course, is an empirical estimate of carbonyl reducing groups *(3,4)*.

Since viscosity measurements in aqueous cupriethylene-diamine hydroxide, as in other aqueous alkaline media, are an unreliable index of the degree of polymerization of cellulose (D.P.) if the cellulose contains a high proportion of reducing carbonyl groups *(6)*, samples of the oxidized pulps were treated in every instance with sodium chlorite, ac-

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[2] Member TAPPI; Director of Fundamental Research, Ecusta Paper Corp., Pisgah Forest, N. C.

cording to the method of Reeves *(15)*, and were then retested for cupriethylenediamine viscosity. The secondary oxidation of the samples with sodium chlorite is without important effect upon D.P., but it converts the carbonyl groups to carboxyl groups and thereby renders the modified cellulose chains stable toward the alkaline solvent employed in the determination of solution viscosity *(15)*. This stabilization effect is especially important in the case of dialdehyde-containing cellulose, which, as Coppick *(6)* has shown, is exceedingly sensitive to alkali.

The viscosity-copper number relationships observed with the various types of oxidized pulp, before and after the secondary oxidation with chlorite, are shown in Fig. 1. These curves are intended to indicate the relative percentage by weight of reducing carbonyl groups present per average chain length; hence, the viscosity measurements on the samples subjected to the secondary oxidation are plotted against the copper numbers of the corresponding pulps before treatment with chlorite. It is interesting to note, in passing, that the copper numbers of the pulps after the secondary oxidation were all close to 0.5.

Beating and Papermaking Characteristics of Oxidized Pulps

The original, untreated pulp and selected samples of oxidized pulp representing different levels of oxidation, as listed in the following table, were beaten at a stock-density of 1.5% in a 1-pound laboratory Valley Iron Works beater with a 10-pound load on the bedplate. Specimens taken from the beater from time to time were tested for Schopper-Riegler standard freeness. They were also examined under the microscope for fiber length. In this test, every fiber in the field, approximately 100 in all, was included in the measurements.

In addition, the beater samples were converted into 12-pound handsheets (24×36=480) on a Valley Iron Works 8-inch sheet mold. Each sheet was couched off the wire onto a blotter, a second blotter was laid on top of the sheet, and the sandwich

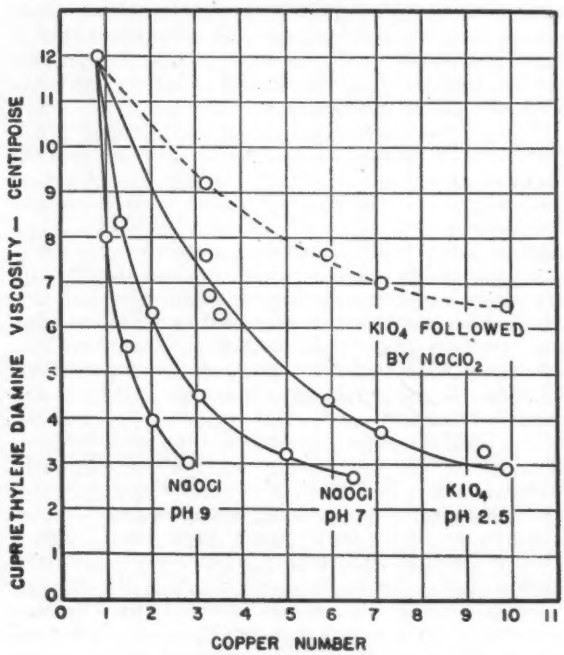

FIG. 1

Copper Number—Viscosity Characteristics of Oxidized Pulps

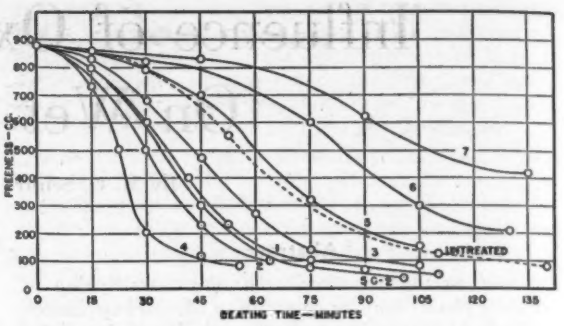

FIG. 2

Freeness—Beating Time Characteristics of Treated and Untreated Pulps (For Legend See Table I)

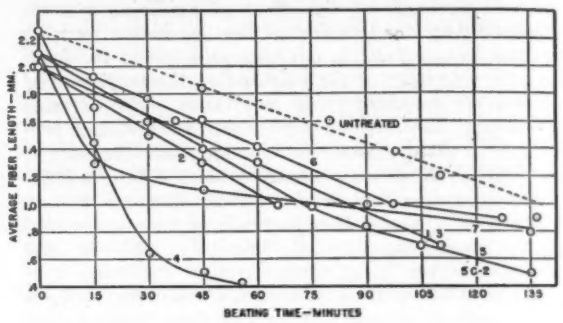

FIG. 3

Fiber Length—Beating Time Curves

subjected to a pressure of 150 p.s.i. for 2 minutes. One of the blotters was peeled off the handsheet, and the sheet dried under the remaining blotter on a steam-heated cylinder for 5 minutes at 200°F.

The test sheets were examined for dry and for wet tensile strengths, MIT folding endurance, and porosity. Tensile strength was determined on strips 30 mm. wide. In the case of the wet tensile strength test, dry strips were clamped in the testing machine, then streaked transversely with water applied by means of a camel's-hair brush. The tensile load was started 30 seconds after the specimen had been wetted. Since in all cases the specimens were highly water absorbent, they were completely soaked through by the time the load was applied.

Wet tensile strengths were determined on the handsheets before and after a heat treatment in an oven for 15 hours at 105°C.

For purposes of comparison, handsheets of the original semibleached kraft pulp beaten 110 minutes were tested for wet strength after impregnation with 1, 2, and 4% urea-formaldehyde polymer on a dry basis (UF 467—Resinous Products Chemical Co.) applied as a solution brought to pH 4.5 with alum added as the catalyst.

Folding endurance tests were made on strips 15 mm. wide under a load of 1 kg. As in the case of the dry tensile strength measurements, the strips were tested at a relative humidity of 60%.

TABLE I.—CHARACTERISTICS OF OXIDIZED PULPS EMPLOYED IN BEATING AND HANDSHEET STUDIES

Pulp	Treatment	Viscosity, centipoise	Copper Number
Untreated	None	11.90	0.68
1	Hypochlorite—pH 7	6.15	2.12
2	Hypochlorite—pH 7	4.50	3.83
3	Hypochlorite—pH 9	5.95	1.50
4	Hypochlorite—pH 9	3.98	2.37
5	Periodic acid—pH 2.5	6.38	4.20
5-C2	Number 5 after treatment with chlorite	8.25	0.70
6	Periodic acid—pH 2.5	4.00	6.36
7	Periodic acid—pH 2.5	2.86	9.90

Porosity of the handsheets was determined as the reciprocal of the time in seconds required for 50 cc. of air to be drawn through a circle of paper 4.5 sq. cm. in area by means of a water leg initially 15.0 cm. and finally 5.0 cm. long in a leveling-bottle type of porosity tester.

The results of the physical tests are plotted in Figs. 2 to 8, inclusive.

Discussion of Results

The data plotted in Fig. 1 show the influence of progressive oxidation on cellulose chain length (viscosity) and on the proportion by weight of reducing groups introduced (copper number). They also show that when the pulp oxidized with periodic acid is subjected to secondary oxidation with chlorite, the curve of viscosity plotted against the copper number of the pulp prior to the secondary oxidation is raised considerably. On the other hand, the pulps oxidized with hypochlorite, especially those reacted at pH 9, change so little in viscosity when subjected to the secondary oxidation with chlorite, even though the copper number is substantially reduced thereby, that the viscosity-copper number curves for pulps treated with both hypochlorite and chlorite were omitted.

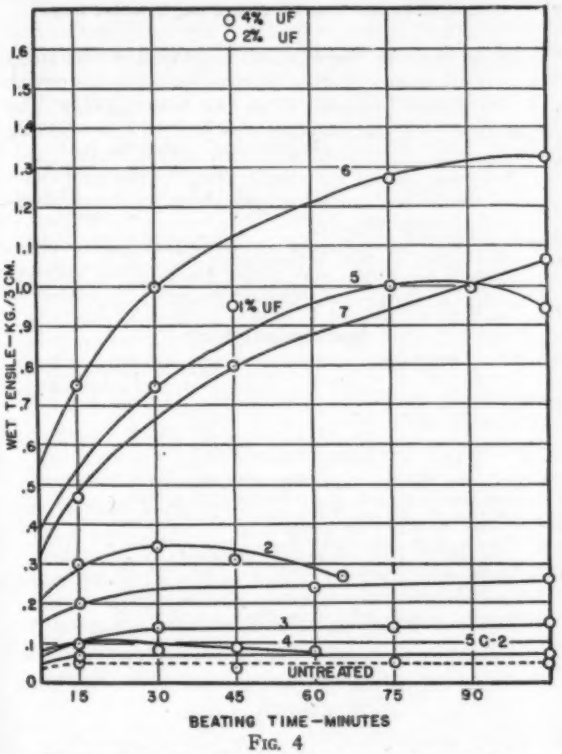

FIG. 4

Wet Tensile Strength Data for Treated and Untreated Pulps

From the curves in Fig. 1, it is evident that the pulps treated with periodic acid contain a greater number of reducing groups per chain than the pulps oxidized with hypochlorite.

The curves in Figs. 2 to 8, inclusive, show the beating and papermaking characteristics of the oxidized pulps. In Fig. 2, it will be noted that the freeness curve for untreated pulp lies between the curves for the pulps treated with periodic acid and for those treated with hypochlorite. It will also be noted that the periodate oxycelluloses become more difficult to beat the lower they are in viscosity; on the other hand, the hypochlorite oxycelluloses beat more rapidly the lower they are in viscosity. A microscopic examination reveals that the periodate oxycelluloses resist fibrillation during beating: the fibers merely shatter; they also appear to be stripped of a skin-like substance. In contrast, the hypochlorite oxycelluloses and the original, untreated pulp fibrillate normally during beating. The skinlike fragments observed under the microscope in the specimens of beaten periodate treated fibers may indicate that the surface of the fibers are oxidized more completely than the interior. This phenomenon may be analogous to that observed by Elöd and co-workers *(8)* in their work on the acetylation of cellulose fibers.

The pulps treated with periodic acid resemble in their papermaking characteristics the partially acetylated pulps studied by Bletzinger *(2)* and by Aiken *(1)*. This is probably due to the blocking in both instances of hydroxyl groups in the pyranose ring, in one case by conversion to dialdehyde, and in the other to acetate. The result of such blocking is a reduction in the capacity of the cellulose to swell in water and to fibrillate during beating. This hypothesis is supported by the extremely porous condition of the test sheets made from the pulps oxidized with periodic acid, as shown in Fig. 8, and by the low dry tensile strength values, as shown in Fig. 6.

The question immediately arises why carbonyl groups introduced by means of periodic acid render the pulp more difficult to beat, while carbonyl groups introduced by means of hypochlorite work in the reverse direction. More data are needed before a satisfactory explanation can be presented, but the answer is probably to be found, at least in part, in the fact that the periodic acid oxycelluloses have a much greater number of carbonyl groups per chain.

The fact that the periodate treated pulps when subjected to a secondary oxidation with chlorite, in

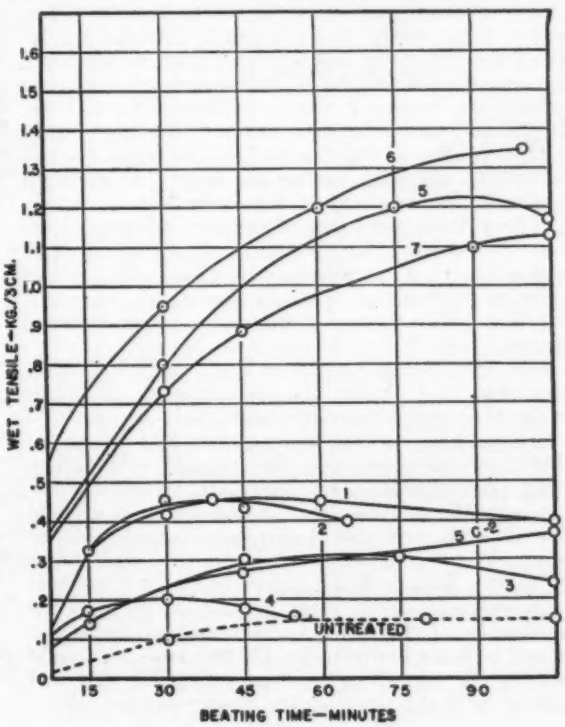

FIG. 5

Wet Tensile Strength Data for Treated and Untreated Pulps. Test Sheets Heat-Treated at 105° C. for 15 Hours

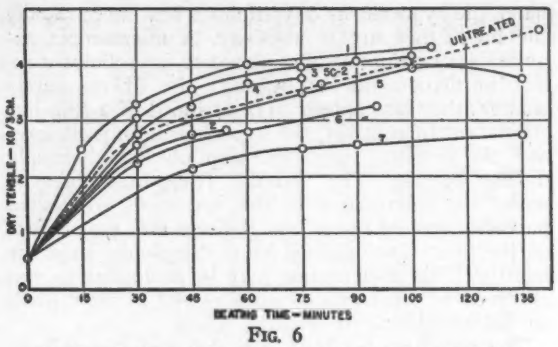

FIG. 6

Dry Tensile Strength Data for Treated and Untreated Pulps

order that the dialdehyde groups may be converted to carboxyl groups, regain their capacity to fibrillate during beating, to develop strength, and to yield paper of more nearly normal porosity, is consistent with the reversion in wet strength.

It is significant that the introduction of carbonyl groups into cellulose chains, whether through oxidation with periodic acid or with hypochlorite, markedly increases the wet strength of the paper made from the pulps, as shown in Figs. 4 and 5. The periodate oxycelluloses are remarkably high in wet strength, the test sheets being comparable in wet strength to the sheets of beaten untreated pulp impregnated with 1 to 4% of urea-formaldehyde resin, as may be seen by reference to the points marked "UF" in Fig. 4. Oxidation of the pulp with hypochlorite at pH 7 increases wet strength to a lesser degree, and when the pH is 9 the increase in wet strength is still lower, yet significant.

It is apparent that the wet strength obtained is independent of chain length (viscosity) for any given type of oxidation.

It is also apparent from the curves that the differences in the levels of wet strength obtained are related not only to the degree of oxidation, as measured by copper number, but to the method of oxidation, within the limits of the experimental data. Fiber length may also enter as a factor. Fiber length data, plotted in Fig. 3, indicate that for any given type of oxidation, the pulp having the higher fiber length yields sheets with higher wet strength.

The striking reversion of the wet strength of the test sheets when pulp treated with periodic acid is subjected to a secondary oxidation with sodium chlorite is consistent with the hypothesis of cross-linkages gained through the presence of the carbonyl groups.

The fold data presented in Fig. 7 appear to indicate that fold, within the experimental conditions studied, is highly correlated with chain length.

It would be informative to gather data on the influence of other oxidants, for example, acid dichromate, permanganate, nitric oxide, etc. Variations arising from the substitution of cotton and sulphite pulp for the kraft pulp should also be of considerable interest. Wet strength measurements on single fibers of cotton, flax, or ramie before and after treatment with oxidants should yield greater insight into the mechanism of the wet-strengthening phenomena observed with the beaten pulps. Further research should include the use of methods of estimating carbonyl groups more definite than the copper number test.

Conclusions

The introduction of carbonyl groups into the

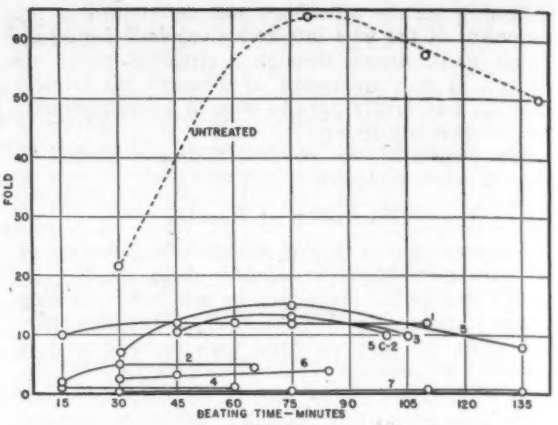

FIG. 7

Folding Endurance Data for Treated and Untreated Pulps

cellulose chain by the methods employed in this study have resulted in a marked increase in the wet strength of test sheets prepared from the beaten pulps. The hypothesis that carbonyl groups lead to cross-linking of the cellulose chains is thereby strengthened.

Other significant changes in the papermaking characteristics of the pulps brought about by the oxidants employed were observed.

The effect of oxidants on the papermaking characteristics of pulp, and more particularly on wet strength, is worthy of further study.

Acknowledgment

P. C. Muffat prepared the oxidized pulps; J. H. Goldberger made the handsheets and conducted the various physical tests.

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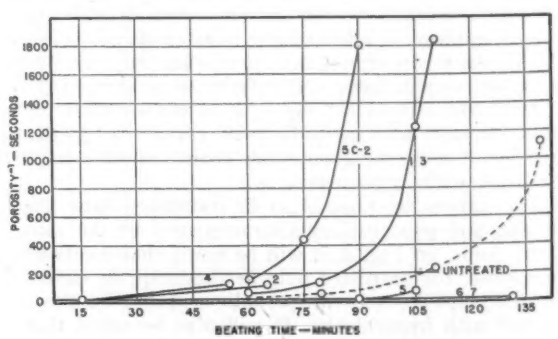

FIG. 8

Porosity Data for Treated and Untreated Pulps

Method for Locating Points of Gas Leakage In Packages and Packaging Materials*

By Hans H. Hartwig[1]

Abstract

A method of locating points of gas leakage, in flexible packages designed to provide the maximum in gas and water vapor protection, is discussed.

A cell is constructed with the test sheet or package which permits introduction of hydrogen sulphide gas under slight pressure. The outside of the cell is brushed or sprayed with stannous chloride solution. Ruptures or openings are located by brown stains resulting from the reaction of hydrogen sulphide and stannous chloride. This method is useful in determining at what point, during conversion or package construction, voids and openings appear.

The problem of providing a high level of water vapor and gas protection in a flexible package for many products is well known. The variations in gas permeability data with some packaging materials, variations in packaging test results, and known damage of packaging materials during conversion and during package fabrication pointed to the need of a method of locating ruptures and openings responsible for package failure. No adequate test procedure has been found to meet this need. A simple water immersion test as applied to packages or inflated bags is not completely satisfactory in locating leaks or package construction failures, since the free flow of gas through an opening is resisted by hydrostatic pressure and surface tension of water.

The method described in this paper has proved to be a useful tool in determining the exact location and degree of gas leakage through either flat sheets, bags, or completed packages. It is useful in identification of the operation which causes ruptures or leaks during conversion or package fabrication. Such identification permits reduction or elimination of the causes of package failure.

Apparatus

The materials required for this test method are as follows:

1. source of hydrogen sulphide; 2. rubber and glass tubing, and stop cocks; 3. petri dishes of size to cover mouth of bag, and shallow tray for mounting flat sheets; 4. microcrystalline wax; 5. water manometer; 6. 5% stannous chloride solution; 7. camel's hair brush; 8. trap with sodium hydroxide solution for effluent hydrogen sulphide; and 9. exhaust hood.

Procedure

A test cell is constructed with the material to be tested (a flat sheet, bag, or completed package can be used) by mounting the sample, using microcrystalline wax as a sealing medium, on a shallow tray, petri dish, or by sealing gas inlet and outlet tubes in the completed package with microcrystalline wax. Figure 1

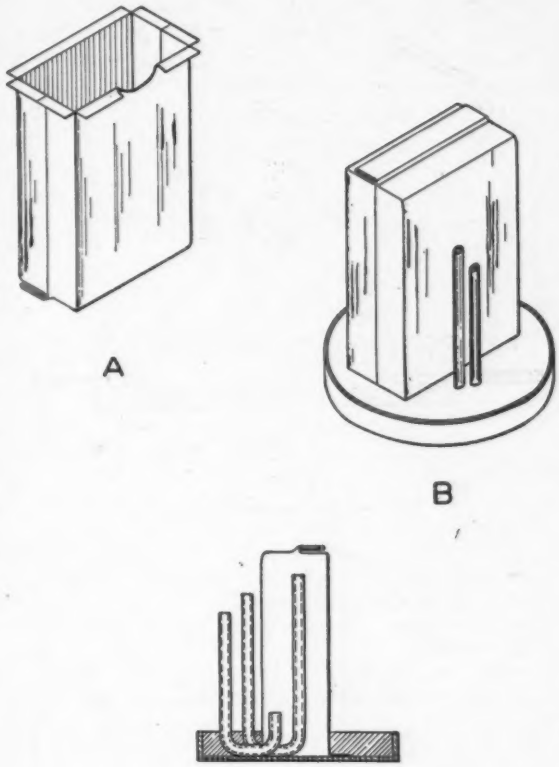

FIG. 1
Test Cell Constructed with Bag

shows a cell constructed with a bag, and Fig. 2 shows a cell constructed with a flat sheet.

Certain simplifications will be obvious in specific cases, such as with a given size bag. The bag can be clamped over the end of a bottle from which the bottom has been removed. The hydrogen sulphide inlet and outlet tubes are fixed in the neck of the bottle with a rubber stopper.

The apparatus is simply constructed by connecting the cell between the source of hydrogen sulphide and the trap. The water manometer is attached to the cell. The cell is swept with hydrogen sulphide, and the stop cocks before and after the cell are adjusted to build up a positive pressure of 1 inch of water within the cell. The surface of the cell is quickly brushed or sprayed with 5% stannous chloride solution. The hydrogen sulphide reacts with the stannous chloride instantaneously to form brown stannous sulphide. If no brown stain appears, the hydrogen sulphide pressure is increased by increments of 1 inch of water until staining occurs or until 4 inches of pressure is reached. The cell is brushed with stannous chloride after each increase in pressure to insure

* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 24, 1947.

[1] Central Manufacturing Engineering Department, Marathon Corp., Menasha, Wis.

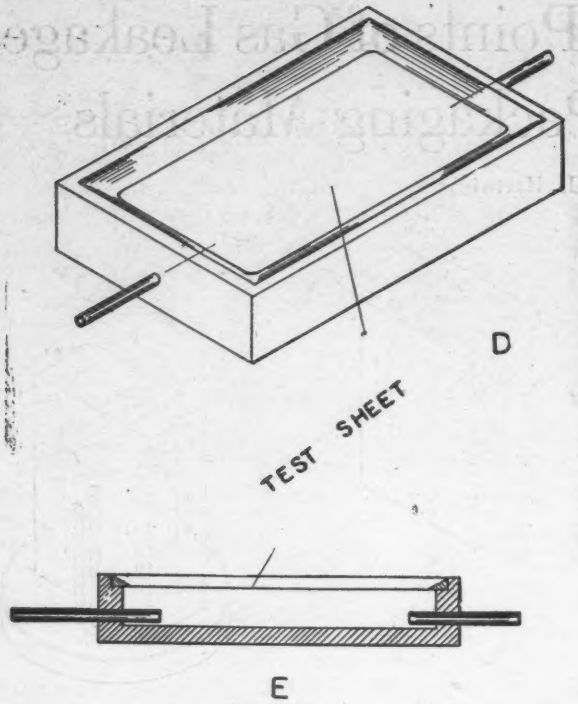

FIG. 2
Test Cell Constructed with Flat Sheet

immediate reaction. The increase in pressure by increments provides a method for differentiating between large and small ruptures. Pressures up to 4 inches of water have been found sufficient in the work to date.

The hydrogen sulphide pressure is cut off, and the test cell is removed from the apparatus. The cell is swept with air, and excess stannous chloride is removed with water spray to prevent further staining. A permanent record of the points of leakage is obtained as shown by Fig. 3.

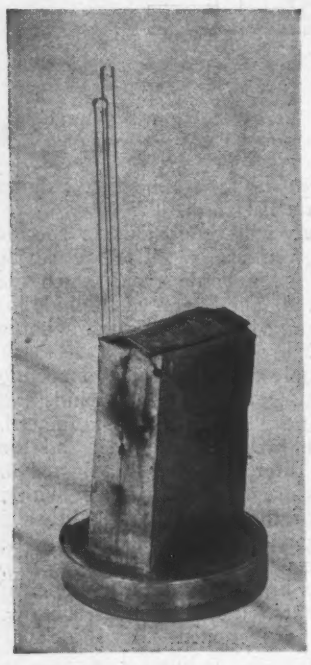

FIG. 3
Photograph of Stain Development on Test Cell

A minimum of five samples is usually tested in order to minimize sampling error. The apparatus should be set up in an exhaust hood to remove escaping gas from the surface of the cell. This is not only a safety measure, but prevents the hydrogen sulphide from staining a considerable surface area of the test cell.

Report

The size and density of the brown stain, location, rate of staining, and any other observation which will describe the condition of the test cell are recorded.

Practical Application

This test procedure has been used in studying the fabrication of bags from three-ply sheet materials, the center ply being aluminum foil. The procedure was useful in determining the effect of weight of foil, and weight and softness of laminant on damage resulting from folding. The pressure used in forming bag gussets was determined to be of great importance in damage to bag material. This method was also used effectively in developing mandrel designs for automatic opening of bags, with minimum damage to bag materials.

Acknowledgment

This work resulted from the joint efforts of D. W. Davis, Frederic Cherepow, August Schmidt, and the author.

TAPPI Notes

W. Kent Kidder, formerly with Nation Wide Papers, Inc., is now manager of the converting division, St. Regis Paper Company, Kalamazoo, Mich.

Eugene E. Rodabaugh, formerly of the Crossett Lumber Company, is now pulping technologist for the New York & Pennsylvania Company, Lock Haven, Pa.

A. L. Sherwood is now vice president in charge of engineering for the Sutherland Paper Company, Kalamazoo, Mich.

Philip A. Nussbaumer, formerly of the Pollock Paper & Box Company, is now with the Waterproof-Ohio Paper Company, 780 Frebis Ave., Columbus, Ohio.

Frederick C. Clark Associates are now located at 50 Church Street, New York, N. Y. Henry Perry, formerly of the J. P. Lewis Company, is associated with Fred Clark.

Ragnar Soderquist is now managing director of the Skutskar Works, Stora Kopparberg Bergslags, A/B, Skutskar, Sweden.

George A. Richter is now superintendent of wood cellulose development, Eastman Kodak Company, Rochester, N. Y.

J. W. Appling, formerly of the Institute of Paper Chemistry, is now director of microbiological research for the Buckman Laboratories, Inc., Memphis 8, Tenn.

Clyde W. Steele, formerly of the Army, is now coating superintendent for the Combined Locks Paper Company, Combined Locks, Wis.

A. D. Ross, formerly of the Titaghur Paper Mills Company, Ltd., Calcutta, India, is now chief engineer for E. Towgood & Sons, Ltd., Sawston, Cambridge, England, and is now visiting in the United States.

Charles Carpenter formerly of the Southland Paper Mills, Inc., is now assistant to the vice president and general manager of the New York & Pennsylvania Company, Inc., Lock Haven, Pa.

G. L. Carruthers has succeeded his father, George Carruthers, as official corporate representative of the Interlake Tissue Mills, Ltd., Toronto, Ont., in the Technical Association of the Pulp and Paper Industry.

P. G. Legendre, chief chemist for the Laboratory of L'Institut du Pin, Bordeaux, France and Jean H. Batier, engineer for Le Bewoid Francais, Begles, France, are visiting in the United States.